

JUN 1954

# Farm Chemicals

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**Fc**

VOL. 120

NO. 6

50 CENTS

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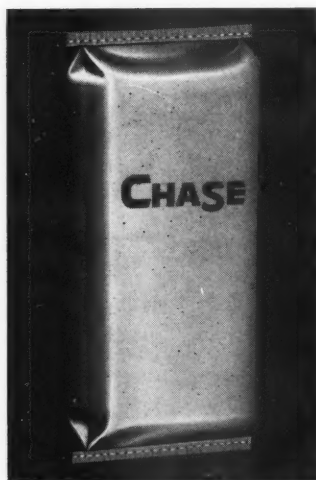
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## **MALATHION stops hard-to-kill boll weevils fast**

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**"One of the safest insecticides to handle"** says the U.S.D.A. about malathion. It has the lowest toxicity for man and animals of any insecticide that will be recommended for boll weevil this year. And malathion is compatible with most other insecticides recommended by local agricultural authorities.

**Kills all these cotton insects:** Malathion stops aphids, mites, leaf hoppers, white flies, leaf worms and leaf perforators when present.

**Does the job in 48 hours** ... really *cleans up* weevils. You get protection quickly...and this maximum kill guards against rapid build-up between sprayings and dustings.

**Free literature.** Write American Cyanamid Company, Phosphates and Nitrogen Division, 30 Rockefeller Plaza, New York 20, New York.

**CYANAMID**

Malathion liquids and dusts are available under the brand names of many well-known manufacturers. Ask your dealer about the brands he carries.

This ad will reach cotton growers all through the South in "Progressive Farmer", "Farm Journal" and "Farm and Ranch"

## **Cyanamid opens new markets for your malathion formulations**

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Aero® Cyanamid: Fertilizers—Defoliants—Herbicides • Aeroprills® Ammonium Nitrate Fertilizer • Aero® Ammonium Sulphate • Cyanogas® Calcium Cyanide Fumigants  
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# Farm Chemicals

## IN THIS ISSUE

Surely there will be much interest generated during the National Plant Food Institute's annual meeting because of two basic ingredients: good speakers and a topic that needs discussion, "Exploring the Fertilizer Market." Read about it on page 40.

The California Fertilizer Association had one of its most successful meetings this year. Read about it and also the speech made at their annual banquet by Dr. Firman E. Bear on page 42.

On page 44 we continue our series on the Federal roadbuilding program and the effects it will have on the Farm Chemicals industry. Included in this issue is the second part of the Fertilizer Outlook and the beginning story on pesticides.

Washington is an interesting city most of the time, but especially when Congress is in session. So much news comes out of there that it is sometimes difficult to separate the grain from the chaff—but our Washington Editor John Harms has done it again with an interesting story on Changing Farm Policy beginning on page 54.

On page 56 you'll find plenty of facts to back up the statement that fertilizer is the farmer's best buy.

## COVER STORY

June is a wonderful month. Brides, graduation, summer jobs, pleasant days not too warm and not too cool and the like. But it is also the month for work as this farmer and the men who supply him with materials know only too well. But then it is a nice environment in which he works—sweet-smelling blossoms, good rich earth turning green and cows contented in lush pastures. It is a serene scene all right, but it is just nice way to look at work—work made it that way and only work can keep it that way.

PIONEER JOURNAL OF THE INDUSTRY, EST. 1894

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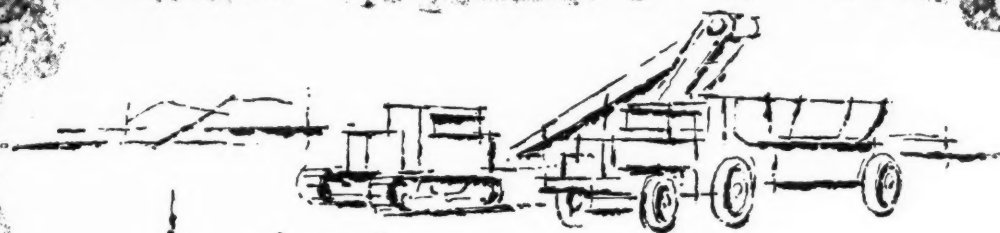
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FARM CHEMICALS



# FIRST PRILLED POTASH



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Your requirements for highest quality in  
condition and dependable service demand  
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The best fertilizer manufactured has contained  
**BONNEVILLE POTASH** since 1938.



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*From front office to finished goods*

# "International's Triple cuts our costs right down the line"

*says Carl Sparks, Vice-President of Buhner Fertilizer Co.*

In the front office of the Buhner Fertilizer plant at Danville, Ill., Carl Sparks keeps a close eye on delivery schedules and shipping costs. Out on the production line, Plant Superintendent Chuck Everhart carefully checks product quality.

With production costs on the way up, both agree the extra savings they get with International's Triple spruces up their profit picture. And with other Buhner plants at Seymour, Ind. (where general offices are located), and at Havana, Ill., these savings add up fast.

Big items in savings are International's dependable service and delivery. "Barge shipments up the Illinois River to Peoria mean substantial savings at all plants," says Sparks. "Even more important, we've learned we can rely on International's Triple to arrive on schedule."

In the plant, Everhart reports uniform high analysis and consistency of particle size mean savings in formulation costs . . . improved granulation.

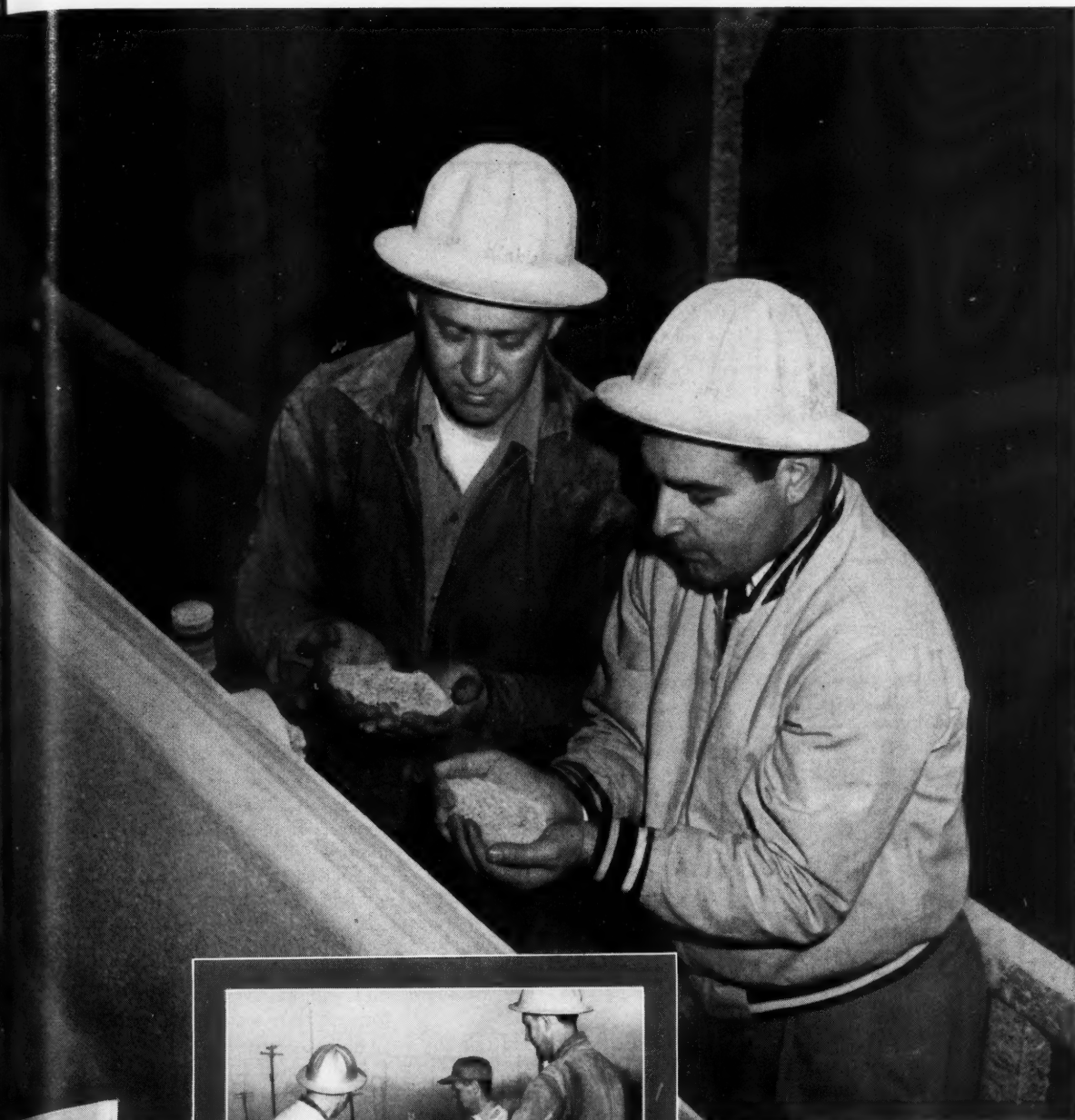
You can realize similar savings by using International's Triple. Write or wire for full information on prices, shipping and warehousing arrangements.

Carl Sparks, vice-president and general manager, has been with the Buhner Fertilizer Co. for 22 years. Photo on desk is of F. F. Buhner, who founded the Seymour plant in 1889. As president, he maintains active leadership in the Buhner organization.



Technician Ken Ohmer watches product quality, tests soil samples in Buhner's chemical control laboratory.





International's Triple has the uniform particle size, "quick-wetting" characteristics important in granulation, report plant foreman George Hinkle, left, and Superintendent Chuck Everhart.

Pelleted and semi-granular fertilizers are sold under Buhner's Happy Farmer brand name in a 5-state sales area. Mixed goods are also shipped in bulk.

**INTERNATIONAL MINERALS**



**& CHEMICAL CORPORATION**

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JUNE, 1957



## FARM CHEMICALS

— Business

Management —

### NEW INSECTICIDE UNIT INSTALLED AT OMAHA

Stauffer Chemical Co. has just completed installation of a new unit at Omaha, Nebr., to produce a broad range of granular insecticides. The new facility will produce granular formulations of DDT, aldrin and heptachlor, according to Porter Williams, area sales manager for Stauffer.

Decision to manufacture the granular insecticides at Omaha stems from research conducted by the Corn Borer Research Laboratory, and work done at other state colleges which indicate that DDT granular gives improved control of the corn borer. As a result of this work, recommendations have been made that farmers use 12 to 20 pounds per acre of 5 per cent DDT granular for corn borer control.

### SHELL UREA PRODUCTION BEGINS AT VENTURA

Shell Chemical Corp.'s new urea plant at Ventura, Calif. is now in production. Shell built the new urea plant adjacent to its Ventura ammonia plant, source of raw materials for the manufacture of urea.

The company also has ammonia manufacturing facilities at Pittsburg, Calif.

### PENNSALT GETS NEW NAME REPORTS ON INCOME

At their recent annual meeting, shareowners of Pennsylvania Salt Mfg. Co. learned from President William P. Drake that net profits for the first quarter were \$1,035,500, an increase of 15.7 per cent over the corresponding period last year. First quarter sales for 1957 were \$19,111,000, an increase of 10.8 per cent over the same period for 1956.

Shareowners approved "Penn-

salt Chemicals Corporation" as the new official name of the company. Objective of the change is to provide a name more descriptive of the company's present activities as a major producer of chemicals for industrial, farm and home use.

### NAT'L DIST. CONTINUES AID TO EDUCATION

The aid to education program adopted by National Distillers & Chemical Corp. and its subsidiaries in 1956 will be continued again this year, the firm announced recently. College scholarships awarded by National, its U. S. Industrials Chemicals Co. division and subsidiary, National Petro-Chemical Corp., will number 13 in 1957, compared with ten awarded last year.

At the same time the firm said it will continue direct assistance to institutions ranging from preparatory to graduate schools through matching contributions made to them by employees.

### AP&CC TRONA PLANT SETS NEW SAFETY RECORD

The Trona plant of American Potash & Chemical Corp. recently set an all-time record of 2 million man-hours without a lost-time accident.

The safety record, involving more than 850 employees at the company's main plant at Trona, Calif., covered nearly a full year without a lost-time accident.

The plant's previous record of 1 million safe man-hours was set between August and December of 1954, after which AP&CC received the Lammot du Pont Safety Award for the greatest improvement in safety in the chemical industry. Since then, AP&CC has received more than 10 safety awards as a result of the

company's intense safety education program conducted for the past three years.

### FIRE AT ROYSTER PLANT

A fire at the F. S. Royster Guano Co. South Norfolk, Va., plant on April 3 reportedly caused damage estimated by company officials at \$500,000.

### SPENCER SALES, EARNINGS DOWN IN 3rd QUARTER

Spencer Chemical Co. reports its sales in the third quarter ended March 31 were about 6 per cent below the all time high of a year earlier. Sales were \$14,152,135, compared with \$15,084,791 a year earlier. Net income for the first three months of 1957 amounted to \$1,729,868 equal to \$1.41 a common share, after preferred dividends, compared with \$2,370,829 or \$1.97 a share a year earlier.

### PACIFIC AGRO BUILDS NEW PLANT IN WASH.

Construction got underway in April on Pacific Agro Company's new fertilizer-insecticide plant at Sunnyside, Wash. Bob Allard, general manager, said that the plant will be completed in time to serve Eastern Washington growers with Agro insecticides during the summer 1957 season.

The fertilizer plant is expected to be in operation by midsummer and will be shipping plant food for late summer and fall applications.

Link Distributing Co. of Grandview, Wash., will operate the new plant.

### UNION CARBIDE & CARBON CHANGES ITS NAME

The name of Union Carbide and Carbon Corp. has been shortened to Union Carbide Corp., effective May 1, it was announced by Morse G. Dial, president.

The names of three divisions of Union Carbide also have been changed. Carbide and Carbon Chemicals Co. has become Union Carbide Chemicals Co., Linde Air Products Co. is changing its name to Linde Co. and Carbide and Carbon Realty Co. will be known as Union Carbide Realty Co.



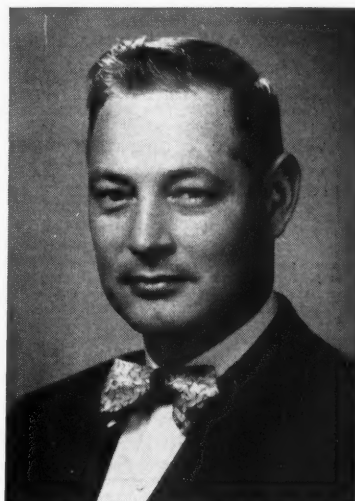
# Now! More Technical Field Service from Du Pont



**JOHN SPICER, JR.**, technical specialist for the southeastern states, with headquarters in Goldsboro, N. C.



**OVE F. JENSEN** will serve manufacturers in the midwestern states, with headquarters in Maple City, Michigan.



**PHIL B. TURNER** will provide technical counsel for plants in the Northeast, and will work from Wilmington, Del.

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- Gives mixed goods better "feel"—minimizes caking, segregation and dusting.
- Prompt, dependable delivery enables you to schedule your production with confidence.
- Suitable for either batch or continuous mixing.

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Wilmington 98, Delaware*



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**URAMON<sup>®</sup>**  
AMMONIA LIQUORS

## HERCULES SALES UP, EARNINGS DECREASE

Earnings on Hercules Powder Co. common stock for the three months ended March 31, 1957 amounted to 48 cents a share, the firm reports. This compares with 55 cents a share for the first quarter of 1956.

Net sales and operating revenues for the quarter were \$60,867,639, compared with \$57,362,562 for the same period in 1956.

## FAB. METALS BUILDS 4 NEW LIQUID FERT PLANTS

Bringing to a total of 90 the number of liquid fertilizer plants built by Fabricated Metals, Inc., San Leandro, Calif., four new plants are now in production in

New Jersey, Idaho and California.

Plant number 90 is making aqua ammonia in Linden, Calif., for Fertilizers, Inc. Other plants which went on stream in March and April of this year include a plant for aqua ammonia and neutral mixes for Delaware Valley Chemical Co. at Swedesboro, N. J.; one for manufacture of aqua at Kimberly, Idaho, for Farm Service Inc.; a plant for aqua and neutral mixes for Melville E. Willson Co., at Madera, Calif.

## ATLAS SALES INCREASE, EARNINGS DOWN FROM '56

Atlas Powder Co.'s sales and operating revenues from explosives, chemicals and other sources in the first quarter of 1957 were \$16,816,355, a 9.1 per cent increase over the \$15,419,348 reported for the corresponding period of 1956, president Ralph K. Gottshall said at the annual meeting last month.

## DAVISON'S NEW LIQUID FERT. PLANT

Davison Chemical Co., Div. of W. R. Grace & Co., entered the liquid fertilizer field with a plant at Wakarusa, Ind., the spring of 1956. It was constructed primarily for market research into the potentials of liquid fertilizers and methods of distribution and to prove the relative merits of liquid and dry fertilizer.

The plant provides for production and storage of aqua ammonia and neutral complete liquid fertilizers as well as storage for

bagged and bulk dry fertilizers.

Davison said it expects the usage of liquid fertilizer to increase during the next three or four years because

1. The increasing number of liquid fertilizer plants make for convenient delivery and service. Localized sales effort is accentuating interest in liquid fertilizer.

2. Liquid fertilizer is easily handled as pumps substitute for hand labor.

Net earnings in the initial 1957 quarter were \$928,241 or \$1.23 a common share. This was 3.3 per cent below the \$959,853 or \$1.28 a common share, earned in the first quarter of 1956.

## CSC-THERMATOMIC MERGE

Commercial Solvents Corp. stockholders recently approved the merger of Thermatomic Carbon Co. into CSC. Approval of the merger, which calls for exchange of 18 shares of CSC stock for each share of Thermatomic, also has been given by Thermatomic's stockholders.

Commercial Solvents has managed Thermatomic, a manufacturer of thermal carbon blacks, since 1931 and holds about 68 per cent interest in that company.

## PAN AMERICAN SULPHUR 1st QUARTER EARNINGS UP

Earnings of Pan American Sulphur Co. and its subsidiary, Azufrera Panamericana, S.A., de CV, for the first quarter this year amounted to about \$731,000, equal to 36 cents per share, compared with \$259,388 or 13 cents per share for the first three months of 1956, Harry C. Webb, president, recently reported.

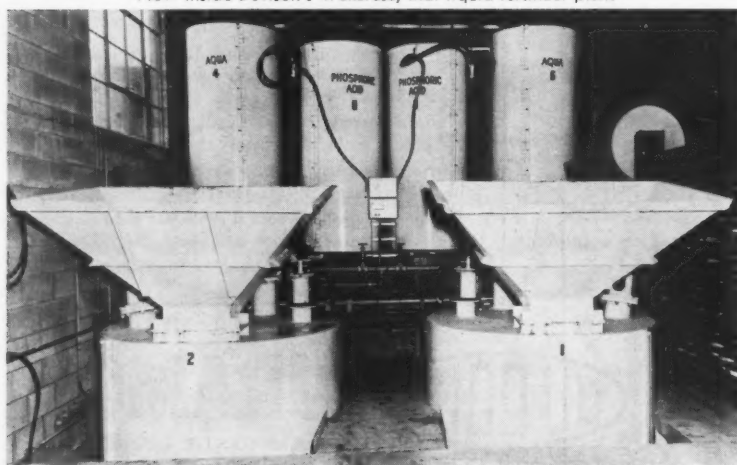
Shipments in the first quarter this year approximated 140,000 long tons, an increase of 79,000 tons from the comparable period last year.

## NEW TRAINING PROGRAM FOR CHEM. ENG. GRADUATES

An intensive, 18-month "engineering experience—technical training" program designed to broaden the advancement opportunities of newly employed chemical engineering graduates within its nation-wide organization has been launched by Diamond Alkali Co.

Thornton F. Holder, director of research, who announced the new career-preparation program for both present and prospective young graduate chemical engineers employed at the Diamond Research Center at Painesville, said the project should prove "mutually helpful to the individual engineer and the company by developing maximum use of professional talents."

View inside Davison's Wakarusa, Ind. liquid fertilizer plant



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TRUE REPELLENCY
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STABLE IN LIGHT
SAFE TO HANDLE
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APPROVED FOR DAIRY CATTLE



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# The truth about Tabutrex

## 23

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ADVANTAGES**  
that can be the  
most profitable  
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**TABUTREX** has given "insect repellency" an entirely new meaning. Now, for the first time, it is possible to meet the vast consumer demand for a **SAFE, ECONOMIC, TRULY EFFECTIVE** fly, roach and ant repellent.

**TABUTREX** has been approved for use on dairy cattle.

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Please rush me all important data on **TABUTREX** insect repellent.

Name

Address

City

Zone

State

Type of Business

(Please put specific inquiries on separate sheet)

## STAUFFER LISTS REASONS FOR EARNINGS DROP

Stauffer Chemical Co. sales for the first three months of this year were \$37,048,000, a decrease of 2 per cent from sales of \$37,767,000 during the corresponding period last year. Net earnings were \$3,106,000 or 90 cents per share,

compared with \$3,302,000 or 95 cents per share in the first quarter of 1956.

The decrease in earnings was attributed principally to three factors. First, price increases effected in recent months have not fully offset cost increases for labor, materials and freight which occurred in 1956. Second, the "late" spring, with cold temperatures prevailing throughout the country, has deferred demand for most of the company's agricultural products. And finally, ex-

penditures for research and development and charges for depreciation and amortization have increased substantially above 1956 first quarter levels.

## ATLAS INCREASES STUDENT ASSISTANCE PROGRAM

Two Atlas Merit Scholarships will be added this year to Atlas Powder Co.'s college student assistance program, now in its fourth year.

Ralph K. Gottshall, president of Atlas, said that winners of the new scholarships will be selected by the National Merit Scholarship Corp.

In another phase of the company's program, six colleges will receive direct scholarship grants of \$1,000 each, to be awarded to one or two senior students in chemistry, physics or engineering at each of the schools.

## NEW NAME FOR NATIONAL DISTILLERS

Name of National Distillers Products Corp. on May 1 was changed to National Distillers and Chemical Corp. to reflect the firm's extensive activities in the industrial chemicals field which it entered in 1950.

## OM EXPANDS CHICAGO WAREHOUSE FACILITIES

Expanded warehouse facilities to serve the Middlewest have been established in Chicago by the Plant Food Div. of Olin Mathieson Chemical Corp., John H. Brown of St. Louis, district manager, recently announced.

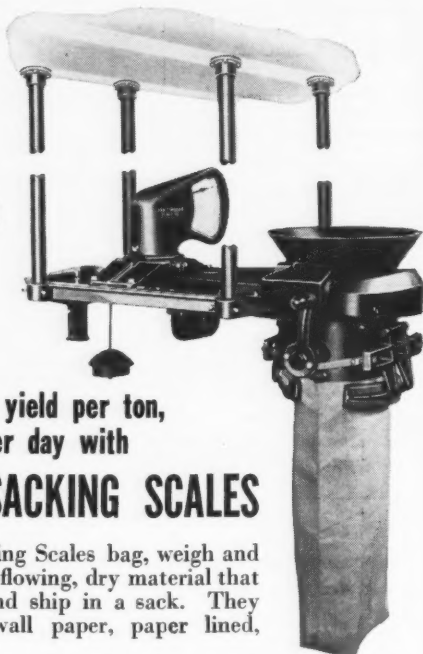
Operated by Calumet Industrial District Co., the warehouse at 130th St. and Indiana Ave. will be a distribution point for Wisconsin, Indiana and parts of Illinois, Ohio and Michigan.

The division's warehouse facilities in East Chicago have been closed.

## INCORPORATIONS

GayCo Agricultural Chemical Services, Fresno, Calif. has filed copies of its articles of incorporation with the Stanislaus County clerk. Directors are Clifford and Elizabeth Gay, Fresno, and Foster and Mildred McSwain, North Bend, Ore.

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more tons per day with

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EXACT WEIGHT Sacking Scales bag, weigh and visibly checkweigh any free-flowing, dry material that will flow from a hopper and ship in a sack. They will accommodate multi-wall paper, paper lined, cotton or burlap bags.

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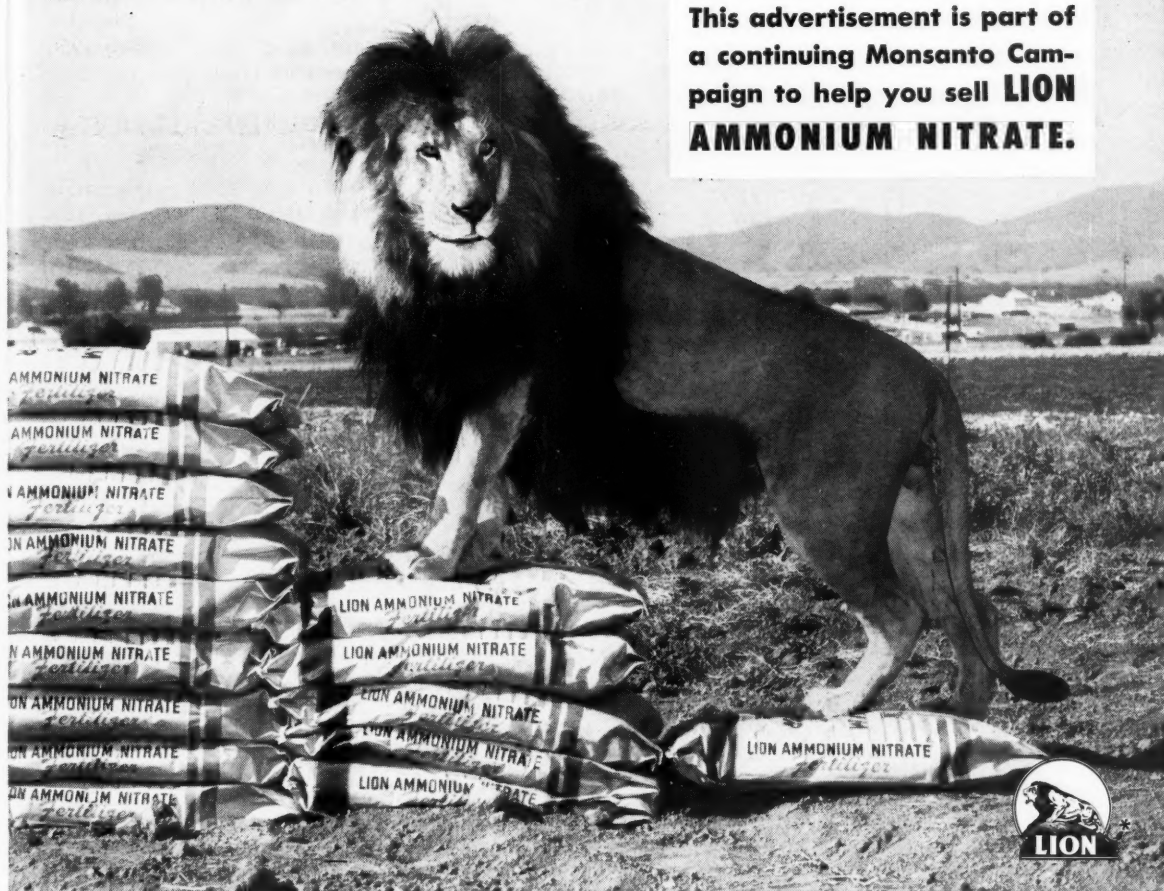
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## You save money with LION in your fields

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OF SODA OR AMMONIUM NITRATE-LIMESTONE CARRIERS**

**FOR LOW-COST NITROGEN,** LION Ammonium Nitrate is the brand. Guaranteed to contain 33.5% nitrogen, LION is...

● **Far more economical** than nitrate of soda, which contains only 16% nitrogen. You get more than *twice as much* of the valuable plant food, nitrogen, in every bag of LION brand Ammonium Nitrate than you do in any bag of nitrate of soda.

● **A better buy** than 20.5% ammonium nitrate-limestone carriers, LION gives you *better than 50%* more nitrogen in every bag.

**FOR EASIER SPREADING,** Lion Ammonium Nitrate is in pellet form. These pellets are specially coated to withstand caking... then packed in specially lined, moisture-resistant bags. Result: LION brand is *guaranteed* to flow freely—not for just a

year, but *until used*—when you follow storage directions on the bag.

### 3 EASY STEPS TO GET ALL THE FEEDING-POWER YOUR CROPS NEED

**1. TEST YOUR SOIL** to see what kinds and amounts of fertilizers are needed. Your local farm authorities will help.

**2. ORDER WHAT YOU NEED** of mixed fertilizer and Lion brand Ammonium Nitrate from your fertilizer dealer. When you buy LION, you get top-quality, low-cost nitrogen fertilizer *guaranteed* to flow freely; *guaranteed* to contain 33.5% nitrogen.

**3. APPLY THE FULL AMOUNT** of mixed fertilizer and Lion brand Ammonium Nitrate soil tests indicate. Don't skimp—fertilizer is the least expensive item you use for crop production.

### GROW MORE PROFITABLY...

Weed Killers • Brush Killers • Parathion Insecticides • Meta-Green® to keep silage fresh • Phosphates (liquid and solid) • LION Sulphate of Ammonia • Anhydrous Ammonia.



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OF POTASH  
for the**

**PLANT FOOD INDUSTRY**

**T**HIS symbol stands for high-grade coarse and uniform Muriate of Potash (60%  $K_2O$  minimum). Southwest Potash Corporation provides a dependable supply of HIGH-K\* Muriate for the plant food industry.

\*Trade Mark

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## CALENDAR

**June 6-8.** Manufacturing Chemists' Association Annual Meeting. Greenbrier Hotel, White Sulphur Springs, W. Va.

**June 9-12.** National Plant Food Institute, Annual Meet. Greenbrier Hotel, White Sulphur Springs, W. Va.

**June 17-19.** 15th Convention, Assn. of Southern Feed and Fert. Control Officials, Dinkler-Tutwiler Hotel, Birmingham, Ala.

**June 18-20.** TVA Pilot Plant Demonstration of Developments in Fertilizer Technology, Wilson Dam Laboratories, Sheffield, Ala.

**June 23-26.** American Society of Agr. Engineers Annual Meeting, Mich. State Univ., East Lansing.

**June 26-28.** Eighth Annual Fert. Conf. of Pacific N. W., Benson Hotel, Portland, Ore.

**June 26-28.** Entomological Society of America, Pacific Branch 41st Annual Meeting, Multnomah Hotel, Portland, Ore.

**July 4-5.** Ala. Seedmen's Assn., Battle House, Mobile, Ala.

**July 10-14.** Plant Food Producers of Eastern Canada Convention, Manoir Richelieu, Murray Bay, Que.

**July 17-19.** Southwestern Fert. Conf. and Grade Hearing, Galvaz Hotel, Galveston, Tex.

**Aug. 13-14.** Ohio Pesticide Institute Annual Summer Meeting, Ohio Agr. Experiment Station, Wooster.

**Sept. 5-6.** Great Lakes States Anhydrous Ammonia Meeting, Michigan State Univ., East Lansing, Mich.

**Oct. 2-4.** Annual Beltwide Cotton Mechanization Conference, Shreveport, La.

**Oct. 3-5.** Pacific Northwest Plant Food Assn. Annual Convention, Sun Valley, Idaho.

**Oct. 14.** Sixth Annual Sales Clinic, Salesmen's Association of the American Chemical Industry, Hotel Roosevelt, New York City.

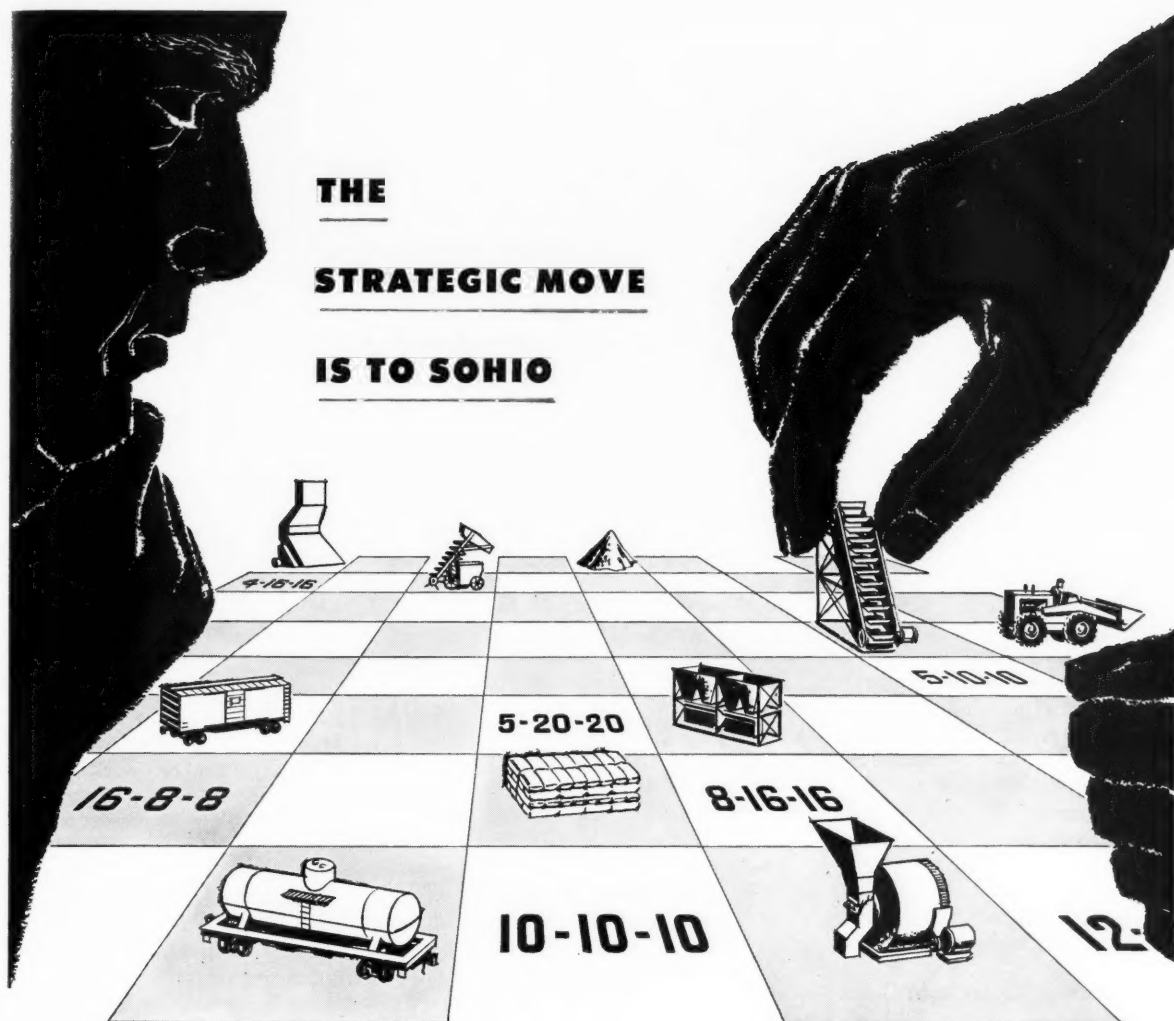
**Oct. 17.** Conference on Chemical Control Procedures, Shoreham Hotel, Washington, D. C. Sponsored by the National Plant Food Institute.

**Nov. 3-5.** 34th Annual Convention, California Fertilizer Association, St. Francis Hotel, San Francisco.

**Nov. 6-8.** Fertilizer Industry Round Table, Sheraton Park Hotel, Washington, D. C.

**Dec. 2-5.** Fifth Annual Meeting, Entomological Society of America, Hotel Peabody, Memphis, Tenn.

**Dec. 11-13.** Agricultural Ammonia Institute Annual Meeting, Hotel Marion, Little Rock, Arkansas.



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## FARM CHEMICALS

People

**A F C, Inc.** Dr. Edwin N. Roth recently was appointed technical director of A F C and has been elected a vice president of the firm. In his new position, Dr. Roth will be in charge of technical development and the manufacture of granular and liquid fertilizers and insecticides. He also will assist field representatives in their service to farmers.

**American Chemical Paint Co.** George H. Williamson has been elected as vice president in charge of West Coast activities, including the ACP plant at Niles, Calif.

Williamson's new responsibilities include supervision of all the company's activities, sales and service of agricultural chemicals and metalworking and processes, and manufacturing at Niles.

**American Cyanamid Co.** Appointment of William E. Weems as manager of technical service for the Phosphates Dept., Phosphates and Nitrogen Div., is announced by Frank S. Washburn, division manager. Weems joined Cyanamid in 1945. Since 1949, he has been connected in various capacities with the firm's technical service to fertilizer manufacturers.

**Battelle Memorial Institute.** Election of Edward E. Slowter as vice president is announced by Clyde Williams, president. A member of the Institute's technical and executive staff since 1936, Slowter has been the foundation's secretary and business manager.

**California Spray-Chemical Corp.** Arthur W. Mohr, Cal-spray president, was recently honored in celebration of his 35th anniversary with Standard Oil

Co. of California. Mohr, who maintains offices in Richmond, Calif., began his career with Standard Oil in 1922 as a chemist in the Fuel Oil and Asphalt laboratories, which later became American Bitumuls. He became district manager of American Bitumuls in St. Louis and later in Baltimore, Md., the position he held until his appointment in 1946 to his present post. Mohr is a past president of the National Agricultural Chemicals Association.

**Commercial Solvents Corp.** Joseph A. Howell has been retained by CSC as a consultant in the field of agricultural chemicals. Howell will serve in an advisory capacity on a part time basis to the company's management and to its agricultural chemicals marketing organization.

Dr. Louis L. Hallock has been named assistant manager of Commercial Solvents' Market Development Dept. He is succeeded as product supervisor for industrial chemicals by A. Mosher Cooke.

**Diamond Alkali Co.** chairman and chief executive officer Raymond F. Evans has been elected to the board of directors of Ionics, Inc.

**Diamond Black Leaf Co.** Appointment of Elmer G. Osborne



Osborne

as sales supervisor and acting manager of the Montgomery, Ala., office has been announced. At his new post, Osborne will be responsible for administration of sales in the Southern District. Before joining

Diamond Black Leaf in 1955, Osborne had been a sales representative of Virginia-Carolina Chemical Corp.

**E. I. duPont de Nemours & Co.** Eugene L. Baenen, formerly a sales representative in the Pacific Northwest for Du Pont nitrogen products for the fertilizer and feed industries, has been assigned to Charlotte, N. C. His new territory includes Virginia and the Carolinas. Baenen joined the company's Polychemicals Dept. as a sales representative in 1952.



Baenen

**Floridin Co.** New Manager of research laboratories is Norman H. Horton, who will headquarter at Tallahassee, Fla. Horton completed undergraduate work at Howard College and graduate work leading to a masters degree in chemistry from Georgia Institute of Technology.

Horton's addition to the Floridin staff will permit Jack W. Moore, vice president and formerly acting director of research, to devote increased time to the company's expanding sales and distribution activities.

**Food Machinery and Chemical Corp., FMC Organic Chemicals Div.** Richard M. McFarland has been named product manager—plastics. He will locate at the division's New York City headquarters.

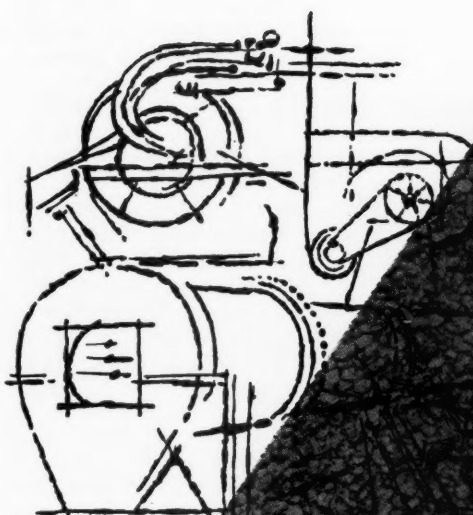
**W. R. Grace & Co.,** Polymer Chemicals Div. announces appointment of Dr. Alio J. Buselli as manager of chemical research at its Clifton, N. J., laboratories.

**Hooker Electrochemical Co.** George J. Bruyn is named manager, New England district sales. He will locate in Hookers' newly established New England office at 265 Grafton St., Worcester, Mass.

**Michigan Chemical Corp.** Judson H. Whitman is named

FARM CHEMICALS

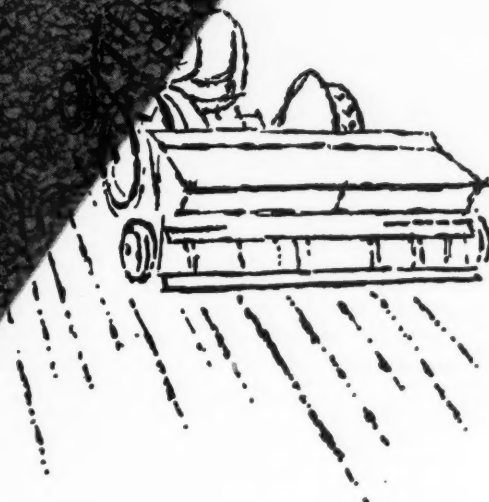




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mining engineer in the company's Rare Earths and Thorium Div. Whitman, who will have charge of exploration and mining programs of MCC pertaining particularly to rare earths, will have his headquarters at Golden, Colo.

Election of H. Stanley Lawton

as vice president in charge of sales and market development also was announced. His headquarters will be at Saint Louis, Mich.

**Nitrogen Div., Allied Chemical & Dye Corp.** Marshall W. Butler is new manager of the South Point, Ohio, plant. Since 1954, he has been assistant to the division's director of production, and before that was assistant to the plant manager at the Hopewell, Va., plant.

At South Point, Butler succeeds C. W. Bahr, Jr., who has been made assistant to the director of production at Nitrogen Div.'s main office in New York.

**Nopco Chemical Co.** has appointed Edward G. Weirich to the post of manager, Specialties Div. Weirich is a graduate of the Univ. of Pennsylvania and Wharton School of Finance and Commerce. He will be responsible for sales and promotion of Nopco's line of synthetic detergents, emulsifiers, dispersants and related specialties.

**Olin Mathieson Chemical Corp.** W. Adrian King has been named as general sales manager of the Industrial Chemicals Div. He has been manager of the division's Automotive Products Dept. He joined the former Mathieson Chemical Corp. in 1953 as manager of hydrocarbon chemical sales and before that was mid-western sales manager of the Plastics Div. of American Cyanamid Co.

**Potash Co. of America.** Shelton Appleton, who recently transferred from the Southwest to PCA's Peoria office, will assume responsibility for accounts formerly serviced by F. H. Kennedy. Kennedy has taken over the duties of mid-western sales manager from T. E. Bradley, who has retired.



Appleton

**Southern Fertilizer & Chemical Co.** Neill S. McLaurin, traffic manager, died in March. He had been with the company since 1912.

**Stauffer Chemical Co.** In a further expansion of the research activities at its Chauncey, N. Y., laboratory, Stauffer has added five more chemists and chemical engineers to the laboratory staff:

Dr. A. Skrzec, process development supervisor; Dr. B. J. Luberoff, group leader, industrial chemical section; Dr. Donald Overbeek, organic chemist; J.

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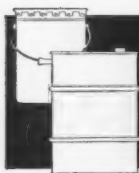
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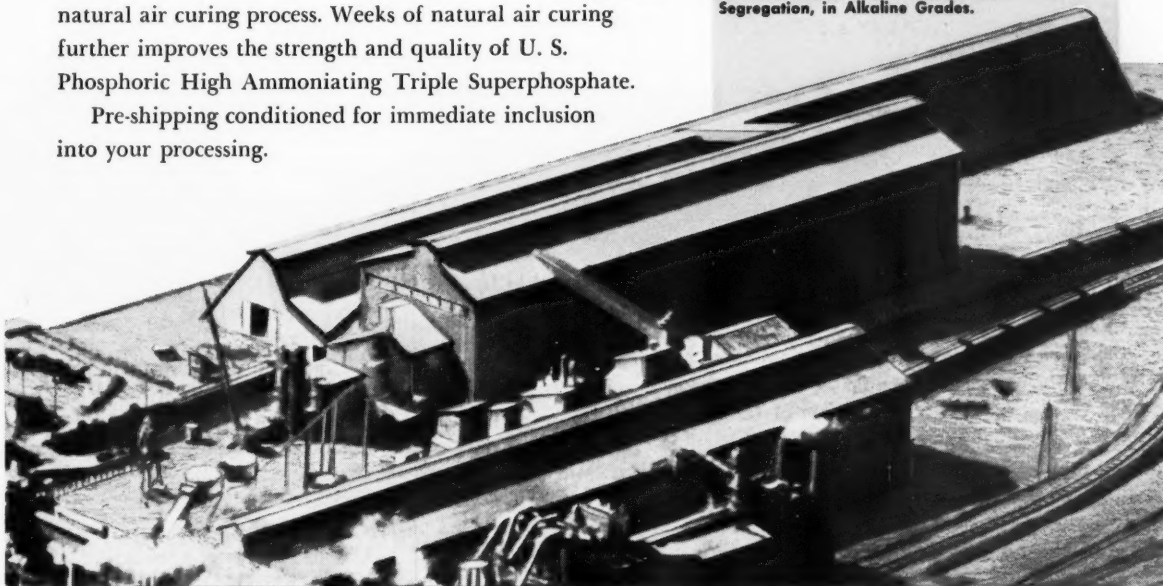
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Koretzky, process development engineer; and C. Wucherer, process development engineer.

Union Carbide Chemicals Co., Div. of Union Carbide Corp. H. R. Cox, Goldsboro, N. C., has been appointed manager of the

company's new Raleigh experimental farm.



H. R. Cox

Cox will manage the 142-acre farm, 17 miles southeast of Raleigh, under the direction of Dr. Ernest R. Marshall, coordinator of field testing for new agricul-

tural chemicals. Chief function of the new experimental farm will be the testing of new herbicides, fungicides and insecticides on a wide variety of crops under actual field conditions. Work conducted there will shorten time required to develop chemicals from test tube stage into commercial use.

U. S. Industrial Chemicals Co., Div. of National Distillers and Chemical Corp. has named six vice presidents: Dr. Robert E. Hulse, William P. Marsh, Jr., Robert H. Cornwell, Alden R. Ludlow, Jr., Francis Olmsted, and Dr. Stuart Schott.



Hulse

Dr. Hulse, general manager of the chemical division, joined National Distillers in 1949 as director of research. He was named a vice president of the corporation in 1952. In addition to being named a USI vice president, Hulse also was elected executive vice president of ND, a newly created post.

Marsh is assistant general manager of USI division.

Cornwell, who will be in charge of chemical production, has devoted his career to chemical and petroleum engineering and operations here and abroad. He joined USI in 1954.

Ludlow became associated with USI in 1934 after graduation from Yale. For the past 10 years, he has been manager of industrial alcohol sales.

Olmsted joined the company in 1951 as director of market research and was promoted to director of development in 1955.

After leaving military service in 1945, Dr. Schott joined National Distillers as a research chemist and subsequently became director of research.

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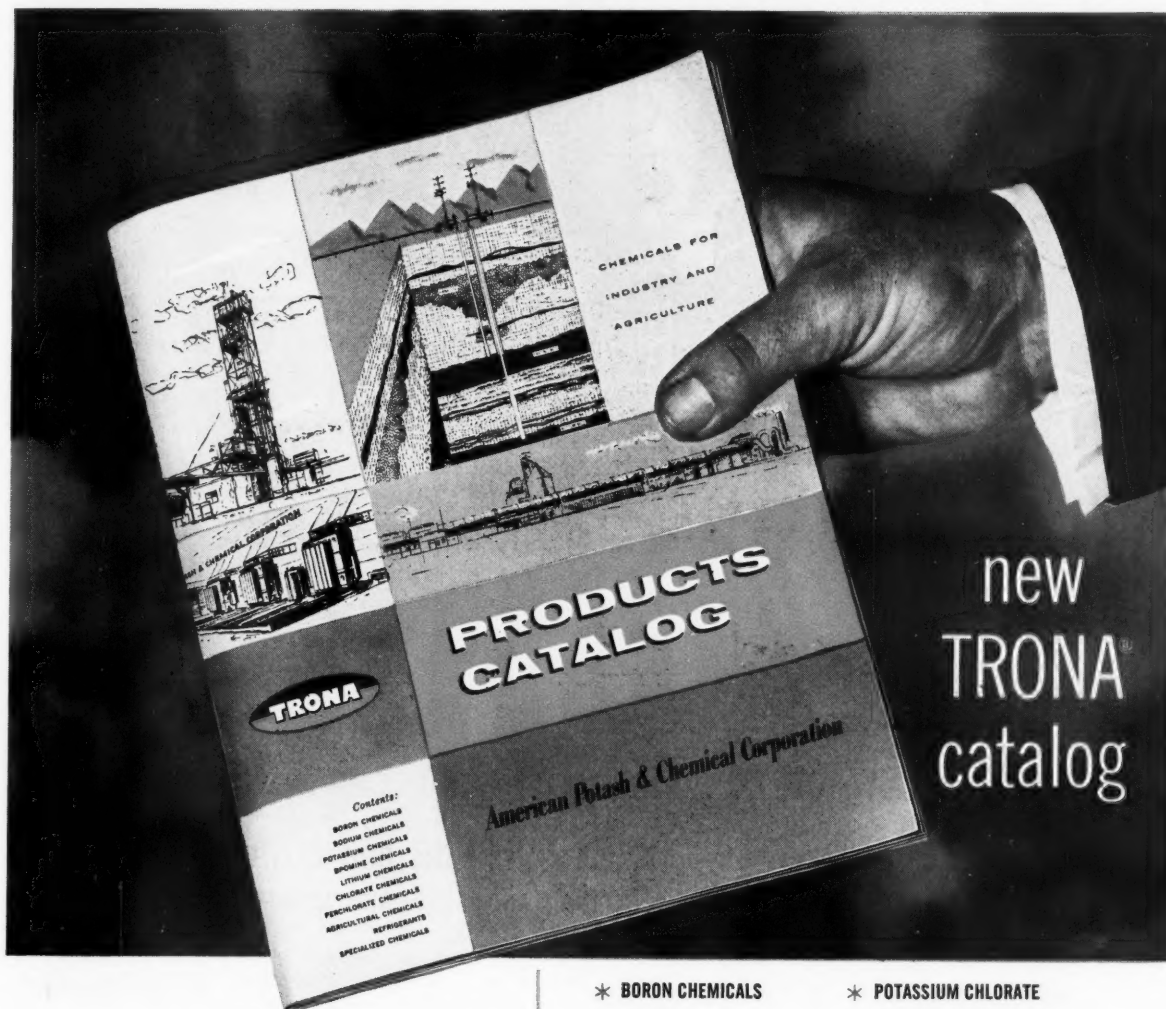
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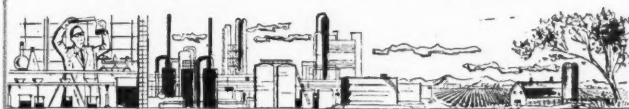
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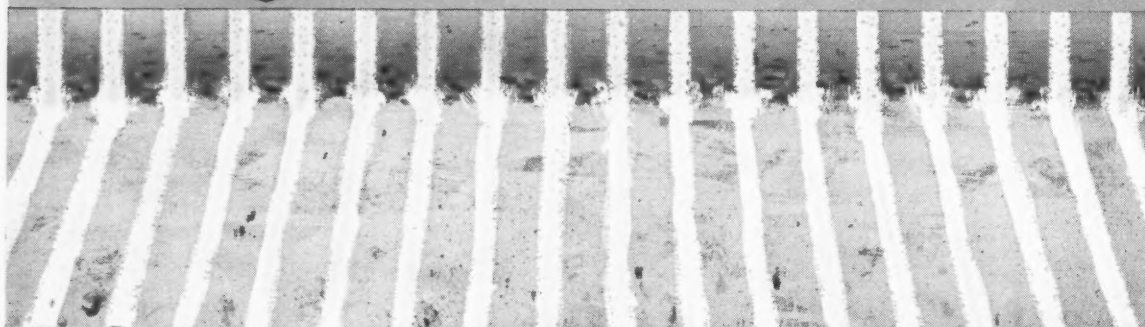
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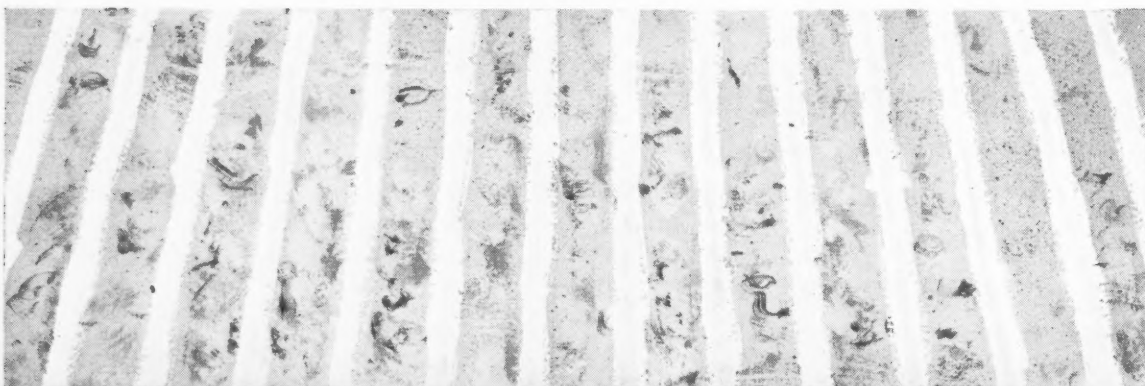
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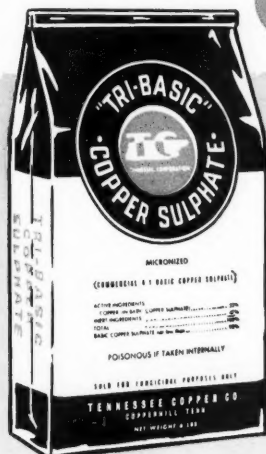
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## FARM CHEMICALS

*Government*

### TVA SCHEDULES FERT. DEMONSTRATIONS

TVA's Office of Chemical Engineering will hold a pilot-plant demonstration of some of its latest developments in fertilizer technology at the Wilson Dam Laboratories near Sheffield, Ala., on June 18, 19 and 20. The demonstration will center around use of the TVA-developed continuous ammoniator.

A series of pilot-plant runs will be made, each run designed to illustrate a different process or the use of new combinations of raw materials. All members of the fertilizer industry and other interested persons have been invited to attend.

The schedule of events includes demonstrations of use of diammonium phosphate in the production of granular fertilizer; use of phosphoric acid containing 76 per cent  $P_2O_5$  in producing granular fertilizer; production of granular ammonium phosphate-nitrates, of ordinary superphosphate for immediate ammoniation, of nitric phosphate using the continuous ammoniator and of granular concentrated superphosphate.

Tours will be arranged for those who wish to see the TVA fertilizer manufacturing facilities and the chemical and agronomic research laboratories.

Those planning to attend the demonstration are requested to notify J. H. Walthall, director of chemical development, Tennessee Valley Authority, Wilson Dam, Ala.

### ACP HANDLES DEFERRED GRAZING PROGRAM

The Agricultural Conservation Program Services will administer the Deferred Grazing program as a part of the ACP, USDA has announced. Recently enacted by Congress, legislation authorizing this emergency program was signed by President Eisenhower April 25.

The new law authorizes assistance to farmers and ranchers to reduce livestock grazing enough to permit conservation and reestablishment of native grass damaged by drought. This was recommended by President Eisenhower at the Wichita drought meeting in January. The Department of Agriculture is making provisions to obtain the funds necessary to carry out the Act.

To be eligible, states must be designated as drought disaster areas by the president.

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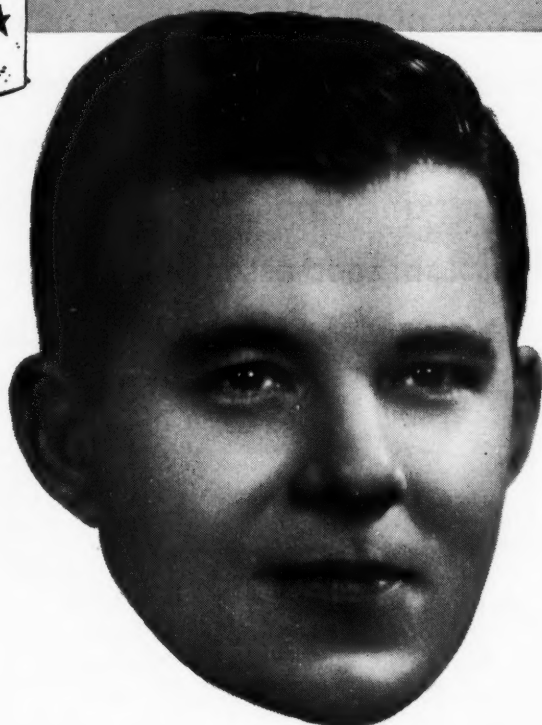
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Union Multiwall Specialists have helped many companies effect substantial economies and gains in Multiwall performance.

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## Associations & Meetings

### 'SEVEN STEPS TO SAFETY' LEAFLET

Safety is just good business—and it's easy if seven basic steps are followed, according to the National Safety Council.

The steps are included in a one-fold leaflet, "Seven Steps to Safety," a digest of the Council's previously published booklet, "Plus Costs of Accidents."

Single copies may be obtained on request from the Small Business Program, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

### NAC ANNUAL MEETING DATES ANNOUNCED

The National Agricultural Chemicals Association will hold its annual meeting in The Essex and Sussex, Spring Lake, N. J., September 4, 5 and 6, L. S. Hitchner, NAC executive secretary has announced.

John A. Rodda, manager, Fairfield Chemical Div., Food Machinery and Chemical Corp., is program chairman for the meeting.

### SCHOLARSHIP FROM NPFI



David Lee Terry (right), a junior at the Univ. of Kentucky, has been awarded the National Plant Food Institute's \$200 Agronomy Club Scholarship. Formal presentation of the grant was made by Dr. W. H. Garman (left), chief agronomist of the Institute, during the College of Agriculture and Home Economic's annual awards banquet on the University campus.

### CACA GROUP STARTS INFORMATION SERIES

A series of information releases is being prepared by the Canadian Agricultural Chemicals Association's Western Publicity Section under the heading "Chemicals and Agriculture."

W. H. Silversides, chairman of the section, pointed out that one of CACA's primary functions is to maintain a close relationship between the industry and various departments of government and with the public in general. With that in mind, the series is being prepared to assist technical agriculturists, the press and radio.

### ALA GROUP RELEASES INSECTICIDE SAFETY FOLDER

The Alabama Association for Control of Economic Pests produced a 4-page pamphlet, "Safety in Handling Insecticides."

Authored by Dr. F. S. Arant of the Alabama Polytechnic Institute Agricultural Experiment Station, the booklet lists precautions to take in handling insecticides, describes symptoms of poisoning from organic phosphates and from chlorinated hydrocarbons and explains about treatments.

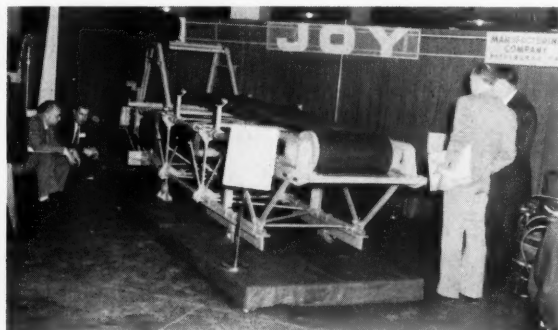
The publication is being mailed to doctors, public health officials, members of the association and local insecticide dealers in Alabama.

## MATERIALS HANDLING—KEY TO AUTOMATION

Over 18,000 people from 14 countries attended the 7th National Materials Handling Exposition held in Philadelphia early in May. According to Clapp & Poliak, Inc., the exposition management, this was the most successful show in its 10 year history.

The three-day conference of the American Material Handling Society held in conjunction with the exposition attracted 900 registrants, setting an all-time high for attendance at any technical session on materials handling subjects.

With 354 exhibiting companies, the 1957 show was the most comprehensive ever undertaken. More than 100 different types of equipment in some 6,000 models were on display. Two of the exhibits at the Exposition are shown below.



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# VIEWING WASHINGTON

with Farm Chemicals  
Washington Bureau

## on agriculture

The Acreage Reserve part of the billion-dollar Soil Bank now seems definitely on the way out. If the Senate does not now go along with the House vote to kill off the program at the end of this year--indications are that it definitely will be done during next year's session of Congress.

This major part of the Soil Bank is falling victim to the high-powered economy drive in Congress. By ending the acreage reserve, budget-cutters figure they can save more than a half-billion dollars this year--a sizeable contribution to the drive to bring about a tax reduction next year. Figuring the savings advocated by the House on the fiscal 1958 and 1959 budgets, agriculture will have contributed more than \$1 billion through an end to the Acreage Reserve and other budgetary economies.

The development which blew the top off the Soil Bank--corner-stone of the President's 1956 farm program--was a field investigation conducted by the House Appropriations subcommittee on agriculture. The investigation turned up many abuses in the 1956 program, which failed to get any reduction in production. Actually, the program started too late to do any good in that direction.

Moreover, the investigation strongly hinted that this year's program has a poor chance of cutting production--as it's intended to do. The move to kill the program was supported by Republicans from states which don't get acreage reserve benefits, such as the Northeast, and by most Democrats, primarily those from the South.

The Conservation Reserve part of the Soil Bank is not affected by the action. Furthermore, there's little chance that it will be--most farm state lawmakers look on it as a solid approach to soil conservation and aim to make it a permanent part of federal programs in that direction. What's likely to happen, though, on the Conservation Reserve, is that Congress may force an increase in rental payments on land contributed. Average annual rent now is \$10. Chances are good that it may be almost doubled. If so, the increase would be made retroactive, according to Rep. H. Carl Andersen of Minnesota, a strong advocate of the Reserve.

If the Acreage Reserve is in fact killed after this year--it undoubtedly would have some effect on future fertilizer and pesticide sales. For example, in the absence of a similar program, it would relieve the pressure on many farmers to push hard for increased yields on fewer acres. More land would be available, and many farmers may conclude they could maintain current production by bringing some of these acres back into production--rather than pouring more fertilizer and other expense into a few acres. It's doubtful, however, that the change would affect the current level of plant food sales.

# VIEWING WASHINGTON

## agriculture Continued

Without an acreage reserve, Secretary Benson predicts that production would go much higher next year. This would severely aggravate the surplus situation. That, in turn, would undoubtedly force Congress to take further action of an emergency nature. (See Changing Farm Policy, on Page 54).

A Presidential veto? If and when the Senate goes along with the House action, the question is raised as to whether the President would veto the bill carrying the death blow, since it's a key part of his farm program. It's not likely, but it is possible. The House action was taken on the Agriculture Department appropriations bills for the year beginning July 1. The House simply refused to approve money for the program--thus in effect killing it. If Ike vetoed, he'd have to veto the entire USDA appropriations measure. Insiders point out that this would have the effect of putting Congress on the spot. It would either have to come up with USDA's appropriation, restoring the half billion dollars for the Acreage Reserve, or leave USDA without operating funds. Precedence for this move came last year when Ike vetoed the rigid 90%-of-parity price support bill and eventually got the Soil Bank and his flexible support law.

The USDA budget was trimmed quite hard by the House--aside from the Acreage Reserve provisions. Most of the other cuts are expected to be approved by the Senate. Generally, all agencies of the USDA were trimmed back to current levels--from a boost of roughly 15% requested by Secretary Benson.

USDA research and extension activities took a big beating. The House endorsed this approach of the Appropriations Committee: "The increased demand for research and extension work during the past four years appears to be the direct result of the reduction in farm income. Demands by farmers for better seed, improved cultivation practices, and better fertilizers and insecticides, to offset price and acreage reductions, have undoubtedly increased the pressure upon the Department for this service." The House went on to say: "With farm income continuing to fall, however, it is apparent that increased appropriations for these activities is not the answer to the farm problem. To continue rapid intensification of agricultural production, with added depletion of the soil of the nation, seems to be at cross purposes with other policies."

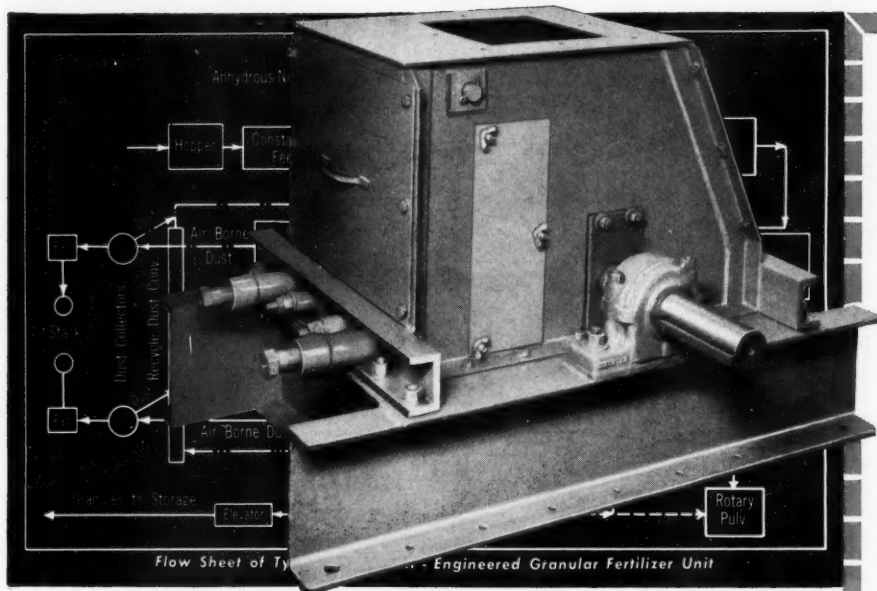
For USDA research, the request was for \$60.0 million, including disease and pest control and meat inspection. The House approved a reduction of \$15.3 million--\$7 million less than current expenditures.

For payments to state Experiment Stations, the House okayed a cut of \$4.5 million in the request down to this year's level of \$29.5 million.

For Extension Service, Secretary Benson sought \$54.4 million. This was cut back to the present level of \$49.1 million.



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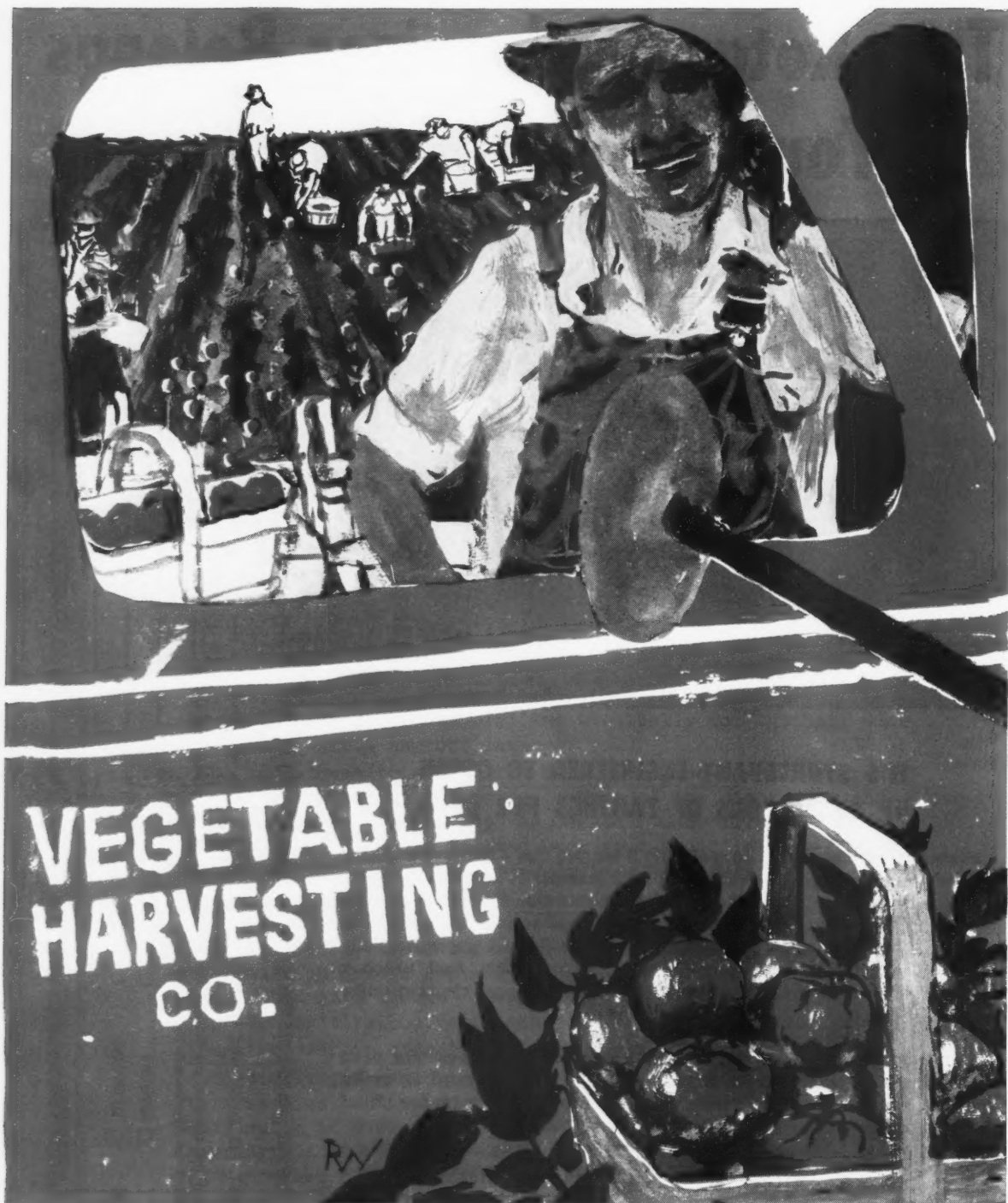
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# Arcadian® News

Volume 2

For Manufacturers of Mixed Fertilizers

Number 6

## DO YOU NEED EXPERT HELP ON A PRODUCTION PROBLEM?

### *Call Nitrogen Division Technical Service!*

**Manufacturing fertilizers** today is no easy task. New problems keep coming up all the time—problems in ammoniation, formulation, granulation, condition—these and many others. And new products are constantly being developed requiring new methods of operation.

That's why Nitrogen Division, Allied Chemical, maintains a large and well-qualified staff of technologists to provide its customers with expert technical assistance. This staff includes hundreds of fertilizer technicians, scientists and engineers working with millions of dollars worth of laboratory and pilot plant equipment including an electronic computer.

#### **Ready, Willing and Able**

When your Nitrogen Division salesman offers to provide you with technical assistance, he is prepared to enlist the aid of a technical service staff larger than the sales force of which he is a member. These men are ready, willing and able to help you find the practical answer to your problem. The accumulated skill of many years of experience augments your own efforts. And this service is available to customers without charge.

These men work on your problem in your plant or in their laboratories using the most modern facilities. They are skilled in ferreting out trouble spots and in recommending new and more economical operating practices. Their aim is to make your plant work efficiently with the least possible adjustment in equipment and personnel. The assistance they give you parallels their extensive and enterprising research in the development of methods and materials



Entrance to one of the Nitrogen Division Research Laboratories

to cut costs of producing high-quality pulverized and granular complete fertilizers in plants everywhere.

Nitrogen Division does not sell factory equipment. Nitrogen Division supplies the most complete line of nitrogen products and renders the best available service on the use of nitrogen in fertilizers.

Nitrogen Division technologists originated nitrogen solutions and the profitable practice of ammoniating superphosphate. Through the years this practice has been constantly expanded and improved through new products and processes. Nitrogen Division has also introduced many other changes in industry-wide practices.

Nitrogen Division technical service is not confined to ammoniation problems and fertilizer formulation. Staff men have a thorough knowledge of the entire operation of a fertilizer plant. They often assist in the selection of equipment and in the suggestion of more efficient, money-saving methods all along the production line.

*This service is available to Nitrogen Division customers without charge, in the interests of the better use of nitrogen in fertilizers. Get the facts from your Nitrogen Division salesman . . . or contact Nitrogen Division, Allied Chemical, 40 Rector Street, New York 6, N.Y. Phone: Hanover 2-7300.*





## **FOUR MILLION BABIES A YEAR ARE BUILDING FOOD MARKETS!**

**At the rate** our population is growing, we'll need 25% more crop production by 1975. In the meantime we are losing a million acres of farmland per year to homes, highways and factories. This loss of farmland is barely offset by our increase in irrigation, in draining swamps, and in plowing up permanent grassland. De-salting seawater is too expensive to give us a practical new supply of irrigation water. So our increase in crops must come largely from increased acre yields.

### **Better Diets**

We cannot afford to let the present temporary plateau in crop production blind us to the future. True, we have increased farm production by a tremendous 40% since 1940. In that period our population expanded from 132 million to 170 million, an increase of 29%, and we upgraded our diet, with more eggs, meat, milk, fruits and vegetables, and fewer cereal foods and potatoes. During the war we also shipped much food abroad. Since the war some of our "surplus" has also gone abroad but this is a small percentage of our annual food production.

Population growth will soon demand

more food, and we will probably continue our upgraded eating habits. Our population will really boom after 1960. Right now our nation produces four million babies and we lose about one million older persons per year. This is a net gain of three million extra mouths to feed per year. By 1965, when the big baby crops of the 1940's have grown up and start having babies of their own, population will climb even faster. By 1975 we may have 220 million people to feed—50 million more than today.

### **We are Losing Farmland**

By 1975, we can hardly expect to have more good productive land on which to grow crops. Our present loss of a million acres of farmland per year to homes, roads and industry may be speeded up. We will have to farm the land we have better. And that means a fast-growing market for fertilizer, farm machinery, weed killers and other farm chemicals. Some statisticians may point out that several million acres of land have been returned to food production by the decrease in acreage of cotton, tobacco, and feed crops for our fast-disappearing horses and mules. But other millions of

acres have been taken out of food production to grow pulpwood and Christmas trees. Even these acres, along with other woodland, will become a market for fertilizer.

### **Farms are Getting Bigger**

We are now using 22 to 23 million tons of fertilizer per year. Good farmers on big farms have been using most of it. The number of farms has been decreasing, while good farmers have been buying more land. That means fewer total prospective customers for fertilizer, but more big customers as farms get bigger. And good farmers will be quick to respond to population pressure that improves markets.

What will an extra three million people eat in a year? They'll eat an extra 270 million pounds of beef, for example. And an extra 235 million pounds of pork, and an extra 540 million quarts of milk. By 1975, 50 million more people in the nation will need 25% more food than we eat now.

If our crop yields per acre should stay the same as in 1951, we would need 150 million more acres of cropland by 1975. We won't have the land. But we will



have enough fertilizer to build these higher crop yields on our present acres.

Now, only 60 per cent of our corn land gets any fertilizer at all, and the average amount of fertilizer per acre on fertilized corn is less than 300 pounds. When we need more corn, fertilizer will grow it! More good farmers will use fertilizer on all their corn crop, at rates of 500 to 1,000 pounds per acre.

Other large-acreage crops get less fertilizer than corn. Only 29 per cent of our wheat acres and 26 per cent of our improved pastures are fertilized. Even with high-value crops like fruits and vegetables, only 68 per cent of the area planted gets commercial fertilizer. There is plenty of room for fertilizer tonnage expansion.

### **Bigger Yields are Essential**

Population growth and the transfer of farm lands to other uses are making it vital that we be prepared to produce more food from each acre cultivated. That would seem to make land more vital to the farmer than ever before. But, as many farm leaders are already pointing out, land is becoming less important in farming. What farmers put into the land is what makes big crops and profits. Land, labor and equipment costs will continue to climb. The basic costs of preparing each acre for growing a crop will go higher and higher. It will take far bigger yields to make each acre pay off. And fertilizer can build these bigger yields at low cost per bushel or pound.

### **More Profit per Acre**

Today a farmer figures he gets a return of \$3 to \$5 for every \$1 he invests in fertilizer. He may not boost this return per dollar very much, as he uses more fertilizer. But he will use more dollars' worth of fertilizer on each acre, to get a bigger crop yield and greater total net profit per acre. We will need more food, and fertilizer can produce it most profitably. Selling fertilizer in the years ahead will be a good and growing business—as well as a service to the nation!

# **It pays to have TWO Fertilizer Seasons!**

**For many years** production, sales and use of fertilizers have been largely concentrated in one season. The success of a fertilizer manufacturer's entire fiscal year has depended on spring business.

Growth of interest in fall fertilization now offers fertilizer manufacturers a better opportunity to develop a two-season business. This would spread production, sales and deliveries over more months of the year. Although fall fertilizers will never match the tonnage of spring fertilizers, increased use of fertilizers in the fall can mean sounder operations and better profits for the fertilizer man and the farmer.

Farmers are now using fertilizers on a greater variety of crops in the fall. Small grains, pastures and vegetables have always been a good market for fall fertilizers. In recent years this fall market for complete plant foods has been expanding to include other crops. Each year farmers are learning more about the proper use of fall fertilizers. They are discovering time-saving and money-making advantages from fall fertilization of corn and other major crops on many soils.

### **The Soil is a Warehouse**

Most soils are an excellent place to store fertilizer through the winter. Storage of phosphorus and potash in the soil has never been a problem. High-nitrogen fertilizers are also practical for fall use, except on sandy soils in heavy rainfall areas.

More high-nitrogen complete fertilizers are being used in the fall for plow-

down with crop residues, and on sod, cover crops and small grains. One of the biggest vegetable farms on the sandy Atlantic Coastal Plain applies all fertilizer but row starter fertilizer on cover crops in the fall. Their agronomists figure that well-fertilized cover crops are equal to one ton of fertilizer plus 10 tons of manure per acre.

### **Better Crops with Less Labor**

Most corn land can profit from fall plow-down of fertilizer, or fall top-dressing of stalks or cover crops. Even on land to be planted to cotton and sugar beets, agronomists recommend fall application of phosphate-potash mixtures, especially with a cover crop. For alfalfa, fall application of fertilizer high in phosphate and potash helps maintain thick stands and profitable yields. Many fruit crops can be fertilized to advantage in the late fall.

Agronomists point out that hayland and pasture in the North should get fertilizer late in the fall so that plant food will be stored in the roots for an early spring start. In the South, oats, wheat, rye and other grazing crops need heavy fall fertilization to provide pasturage plus a profitable grain crop. In other winter grain areas, all the fertilizer can go on in the fall to produce equally as big a crop as split or spring applications would produce.

Labor shortages and high labor costs give every farmer the urge to use machinery and get more jobs done at other times than during the spring rush. Fall, with dry ground and slack time, is an ideal season to spread fertilizer by truck and other simple, fast, low-cost methods.

### **A 200-Million-Acre Potential**

Many leading farmers are now using fall fertilizers with outstanding success. Expansion of this practice to other thousands of farms will make the fertilizer business more of a two-season business.

The corn, small grains, vegetables, fruit, pasture and hay crops now grown on soils adapted to fall fertilization represent a potential market of more than 200 million acres. Start now to get a bigger share of this market by aggressive promotion of fall fertilizers.



### **Tonnage Opportunities**

Fertilizer manufacturers now have a better opportunity to develop more fall business.

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There are many reasons why it pays you to deal with Nitrogen Division, Allied Chemical. You are served by America's leading producer of the most complete line of nitrogen products. You benefit from millions of tons of nitrogen experience and the enterprising research that originated and developed nitrogen solutions for the fertilizer industry. You are assured of dependable supplies from three huge plants at Hopewell, Ironton, and

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<b>NITRANA®</b>								
<b>2</b>	41.0	22.2	65.0	—	12.8	1.137	10	21
<b>2M</b>	44.0	23.8	69.8	—	6.4	1.147	18	26
<b>3</b>	41.0	26.3	55.5	—	18.2	1.079	17	-25
<b>3M</b>	44.0	28.0	60.0	—	12.0	1.083	25	-36
<b>3MC</b>	47.0	29.7	64.5	—	5.8	1.089	34	-30
<b>4</b>	37.0	16.6	66.8	—	16.6	1.188	1	56
<b>4M</b>	41.0	19.0	72.5	—	8.5	1.194	7	61
<b>6</b>	49.0	34.0	60.0	—	6.0	1.052	48	-52
<b>7</b>	45.0	25.3	69.2	—	5.5	1.134	22	1
<b>URANA®</b>								
<b>10</b>	44.4	24.5	56.0	10.0	9.5	1.108	22	-15
<b>11</b>	41.0	19.0	58.0	11.0	12.0	1.162	10	7
<b>12</b>	44.4	26.0	50.0	12.0	12.0	1.081	25	-7
<b>13</b>	49.0	33.0	45.1	13.0	8.9	1.033	51	-17
<b>15</b>	44.0	28.0	40.0	15.0	17.0	1.052	29	1
<b>U-A-S®</b>								
<b>A</b>	45.4	36.8	—	32.5	30.7	0.925	57	16
<b>B</b>	45.3	30.6	—	43.1	26.3	0.972	48	46
<b>Technical Ammonia</b>	82.2	99.9	—	—	—	0.618	211	—

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A colorful technical bulletin on Terraclor has just been published by the Olin Mathieson Chemical Corporation. Terraclor is a new fungicide recommended for the control of a number of crop diseases, primarily certain soil-borne types. A copy of this bulletin is available free by just

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A booklet, "Granular Formulations with Vermiculite" has just been issued by the Vermiculite Institute.

The new folder covers the preparation of granular insecticides, herbicides, and fungicides with vermiculite as the carrier. Helpful hints on handling and formulating specific products are included.

For your free copy

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A new brochure entitled "Ammonium Thiocyanate as Corrosion Inhibitor for Ammoniating Liquors" has just been published by the J. T. Baker Chemical Co. The brochure is a condensation of an earlier report by Hackerman & Hurd. It is available free by just

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Greenz 26, a product of Crown Zellerbach Corporation, is a material that will help solve the iron chlorosis problem in plants. It is not a chelate, but does contain 4.5 per cent iron. For more information about Greenz 26 just

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Urox Weed Killer, developed by the General Chemical Division of Allied Chemical & Dye Corp., is a new granular chemical herbicide designed for dry application with simple inexpensive equipment.

The manufacturer claims it gives full season control of most annual and perennial grasses and broad-leaved weeds in non-crop areas.

For more free information on Urox just

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### 163—NEW INSECT-REPELLENT

The Glenn Chemical Company has full information and price lists now available for its new insect-repellent Tabutrex. The company claims that Tabutrex has 23 separate and distinct proven advantages. More complete information and price lists are available free by just

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FREE INFORMATION to help you  
solve fertilizer, pesticide problems

## Reader Service

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Borate weed killers are effective because they destroy roots and rhizomes and prevent regrowth for long periods. They also are nonpoisonous, non fire-hazardous and won't corrode ferrous metals. For more free information on Borate weed killers just

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Fertilizers ammoniated with DuPont UAL have extra sales appeal because they are composed of two highly efficient forms of nitrogen—urea and ammonia.

Four formulations are available. For more information on formulations just

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Crag Fly Repellent, mixed with insecticides, is being used by more and more formulators. The manufacturer claims his repellent used with an insecticide gives you two sales-building advantages: good repelling action and extended and improved effectiveness of the insecticide. For more free information about formulation of fly sprays with Crag Fly Repellent just

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Stauffer Chemical Co. has available a brochure describing how soil fumigation increases yields of many crops. It outlines methods of fumigating soil by applying temporary soil sterilant, Vapam. Send today for a free informative eight page brochure giving complete details on the chemical.

CIRCLE 167 ON SERVICE CARD

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## Process Equipmt.

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If you have too many fines in your product, Nordberg Mfg. Co. says you should upgrade with its Symons V-Screen. The screen utilizes centrifugal force, especially designed for sizing material in the finer sizes. A free bulletin giving the complete story on the screens is yours if you

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## 170—ROCKWELL-NORDSTROM SEMI-STEEL VALVES

A completely revised 43-page bulletin covering the entire Rockwell-Nordstrom semi-steel valve line has just been issued by Rockwell Mfg. Co. The bulletin has a number of entirely new features including new highlighted photos and larger easier-to-read specifications tables. For your copy,

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A new 24-page 2-color illustrated catalog showing its complete line of equipment for the fertilizer industry has just been published by the Stedman Foundry and Machine Company, Inc.

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## Packaging

### 172—THREE BOOKLETS ON PACKAGING AVAILABLE

Hinde & Dauch have issued three booklets on packaging that are packed with sound packaging information to help you cut costs and improve the efficiency of your packaging operation. These colorful booklets are available free by post

CIRCLING 172 ON SERVICE CARD

### 173—PACKAGING PRODUCTS

If you are interested in multiwall paper bags, burlap and cotton bags, as well as various combined packaging products you better get a copy of the bulletin entitled "A Handy Guide to Chase Bag Packaging." It's a colorful, well-illustrated reference book that shows the broad scope of the Chase Bag activities. For your free copy just

CIRCLE 173 ON SERVICE CARD

### 174—BEMIS JETROL INJECTOR

The new, better way to add liquid insecticides to fertilizer is with Jetrol, claims Bemis Bro. Bag Co. Jetrol, a Bemis-designed attachment for the new Bemis Fertilizer Packer, automatically sprays liquid insecticide through your fertilizer as it falls into the bag. For further details on the fertilizer packer and Jetrol attachment,

CIRCLE 174 ON SERVICE CARD

**See page 58 for information on  
these Reader Service Numbers—**

**183—Horizontal Contactor**

**184—Roura Hopper**

**185—B&L Convertor**

## Materials Handling

### 175—4 IN 1 BUCKETS

The Frank G. Hough Co. announces another exclusive attachment for their line of Payloader tractor shovels. This is the Drott 4-in-1 bucket—it's a shovel, clamshell, scraper and bulldozer all in one. For more information about Payloader tractor-shovels and attachments just

CIRCLE 175 ON SERVICE CARD

### 176—PUSH, PULL WITH NEW CLARK TRACTOR

A compact, battery-powered tractor that can be used for both pulling and pushing operations in confined areas has been added to the "Powrworker" line of hand trucks produced by Clark Equipment Co.

The machine has a normal draw bar pull of 200 lbs. and a break-away rating of 700 lbs. It has two speeds in both forward and reverse and will travel 2 mph fully loaded and 3.2 mph empty.

More information will be sent to you if you

CIRCLE 176 ON SERVICE CARD

### 177—CLARK BROCHURE ON FIELD SERVICE SCHOOL

The Field Service School of the Industrial Truck Division of Clark Equipment Co. now has available an eight-page brochure describing the facilities, methods of teaching and course of study utilized by the School to teach maintenance and repair of Clark's gas, electric, and LP-Gas powered fork trucks, powered hand trucks and straddle carriers.

This brochure available free by just

CIRCLING 177 ON SERVICE CARD

### 178—NEW RICHARDSON SCALE INFORMATION

The Richardson Scale Co. has information available on its new portable scale. The scale is especially useful for weighing heavy bulk materials at storage bins located at scattered points within a plant. It will handle loads from 200 to 1000 pounds.

For more free information about this new portable scale just

CIRCLE 178 ON SERVICE CARD

## How to use the READER SERVICE CARD

- Circle number of literature you want
- Print or type your name, position, company and address.
- Clip and mail the Service Card.

### 179—ALUMINUM BAG CONVEYOR

Information is now available from the Burrows Equipment Co. on their new aluminum bag conveyor. The conveyor is made of heavy gauge aluminum alloy and is available in 10 to 18 ft. lengths. The unit can be furnished with three different hydraulic lifts.

For more free information just

CIRCLE 179 ON SERVICE CARD

### 180—NEW FOLDER ON BELT TREATMENT

The John C. Chambers Co. has just released a new folder describing the "Talismanic" line of belt treatments. According to the folder the company has treatments for leather, rubber, canvas and rope drives. Other products described are special treatments for softening, preserving and cleaning. You can get this folder free by just

CIRCLING 180 ON SERVICE CARD

## Miscellaneous

### 181—NEW PLASTIC SKIN COATING

Ply no. 9 Gel is particularly useful to workers in farm chemicals processing, reports Milburn Co. The protective coating is a plastic dispersed in gel form in a water base. When the compound is applied to the skin, the manufacturer says the water base evaporates to leave a skin-hugging, continuous, elastic, plasticized film. You can get a four-page brochure on the coating by

CIRCLING 181 ON SERVICE CARD

### 182—PIPE AND TUBING BOOKLET FROM TRENT

The Trent Tube Company has just published a new 48-page illustrated product catalogue for engineers, purchasing agents and users of stainless steel and high alloy pipe and tubing.

The manual describes Trent Tube products ranging in size from  $\frac{3}{8}$  inch to 40 inches in outside diameter.

For your free copy just

CIRCLE 182 ON SERVICE CARD

FARM CHEMICALS





*If you had to drive a car for 8 solid hours in traffic like this . . .*  
**would you be satisfied with an old fashioned gear shift?**

Even an antique car enthusiast will have to admit that a manual gearshift is a tiresome business when you're caught in a traffic jam—when you have the constant clutching, and declutching and inching along in bumper-to-bumper traffic.

Did you ever recognize the similarity between a traffic jam and a typical bulk-handling job? In both cases, the runs are relatively short, constantly Stop and Go (and in bulk handling, constantly Forward and Backward). The automobile manufacturers long ago took this burden off the driver by giving him various types of "clutchless" transmissions. Now Clark has done the same thing for the industrial Tractor

Shovel operator: Clark's exclusive Power-Shift transmission on the 16 cu. ft. MICHIGAN Model 12B.

**No clutch pedal, no engine clutch**

The small photo at left shows the operator's compartment of the MICHIGAN Model 12B. There's a double brake pedal—operate it with either foot. There's no clutch pedal, no engine clutch, no gear clash when shifting. This heavy-duty Clark transmission is as fast and as easy to operate as a modern car—the driver merely selects High-Low-Forward or Reverse and lets the Power-Shift transmission do the work. He can make any shift while moving in either direction.

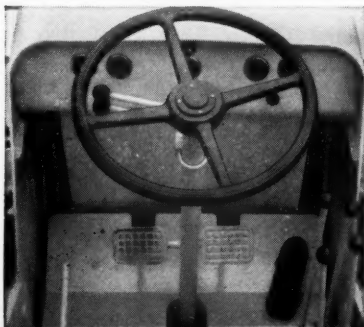
**Improves operator efficiency**

Power-shifting drastically reduces operator fatigue. The MICHIGAN operator doesn't have to ride a clutch all day. He can work smoothly and easily through peak periods throughout the day and still be close to top efficien-

cy when bulk-handling runs overtime. New operators can learn to run the MICHIGAN Model 12B in a few hours. And when several operators take turns on the MICHIGAN, the machine doesn't suffer—the hydraulic-operated Power-Shift transmission provides built-in protection against "clutch riders" and "cowboys."

**See for yourself**

Without any obligation, you can put the MICHIGAN Model 12B to work on any job in your own plant. We'll bet the MICHIGAN will outproduce any loaders in its size range, bar none. You be the judge. Clip the signature below to your letterhead and mail to us—we'll make the arrangements for an on-the-job demonstration.



Michigan is a registered trade-mark of

**CLARK EQUIPMENT COMPANY**  
 Construction Machinery Division  
 2461 Pipestone Rd.  
 Benton Harbor 4,  
 Michigan

**CLARK®**  
**EQUIPMENT**

### INSTITUTE OBJECTIVES

- ▶ To foster and promote, within the framework of a competitive free enterprise system, the lawful and legal interests of the fertilizer industry.
- ▶ To encourage and support agricultural research and to aid in the dissemination of the findings thereof.
- ▶ To cooperate with the fertilizer control officials in the several States in accomplishing a better understanding of the State fertilizer laws.
- ▶ To carry on educational and public relations programs to increase the public knowledge, acceptance and proper use of fertilizer.

ANNUAL MEETING

# NATIONAL PLANT FOOD INSTITUTE

JUNE 9-12, 1957

## EXPLORING



Karl E. Mundt  
U. S. Senate



Raymond Rogers  
New York University



O. E. Anderson  
Ohio Bankers Association



E. T. York  
American Potash Institute



Gordon B. Nance  
University of Missouri



Wilbur Renk  
Wisconsin Farmer



C. T. Prindeville  
NPFI President



Russell Coleman  
NPFI Exec. Vice Pres.

A thorough analysis of today's fertilizer market is going to take place during the annual meeting of the National Plant Food Institute at The Greenbrier in White Sulphur Springs, W. Va. on June 9-12.

Outstanding speakers have been obtained for the program including Senator Karl E. Mundt (R-S. D.), a member of the Senate Committee on Agriculture and Forestry. Appearing with Senator Mundt on the Tuesday morning program will be Raymond Rogers, Professor of Banking, Graduate School of Business Administration, New York University. Mr. Rogers will discuss "The Current Economic Outlook for Business."

On Monday morning there will be a panel discussion on "How Big is the Fertilizer Market." The moderator will be O. E. Anderson, Secretary of the Ohio Bankers Association. Panel speakers will be E. T. York, Northeast Manager, American Potash Institute who will discuss the subject "From the Soil and Crop Standpoint;" Wilbur Renk, outstanding Wisconsin farmer, speaking "From the Farmer's Standpoint" and Gordon B. Nance, Professor, Department of Agricultural Economics,

## THE FERTILIZER MARKET

University of Missouri, Columbia, speaking "From the Economic Standpoint." Mr. Anderson will discuss "From the Bankers Standpoint."

Russell Coleman, Executive Vice President, National Plant Food Institute, will follow the panel presentation with a discussion on "How Your Institute Can Help Expand the Fertilizer Market." The annual business session of the Institute will also be held Monday morning.

The convention will begin with registration on Sunday, June 9 and a meeting of the Institute's Board of Directors is scheduled during the afternoon or evening.

The Institute's Research and Education Committee will meet Monday afternoon. The Committee consists of the following three divisions: Agronomy and Horticulture, Fertilizer Technology, and Economics and Farm Management. Dr. W. H. Garman, Chief Agronomist for the Institute, serves as Secretary. Reports will be made by the Chairmen of the respective divisions.

Winners in the Institute's "Soil Builders Award for Editors" contest will be presented scrolls by Mr. C. T. Prindeville, President of the Institute. Two editors will be honored, one in the field of magazines with more than 300,000 circulation and the other with less than 300,000 circulation.

Hospitality Hours are being planned for both Monday and Tuesday evenings. The Nitrogen Producers will be hosts on Monday evening while the Potash Producers will be hosts Tuesday evening. The annual banquet will be held Tuesday evening.

Recreation for the meeting will include a men's golf tournament, a tennis tournament, horseshoe pitching contest, and a ladies' bridge and canasta party. A special program has been planned for the ladies attending the convention.



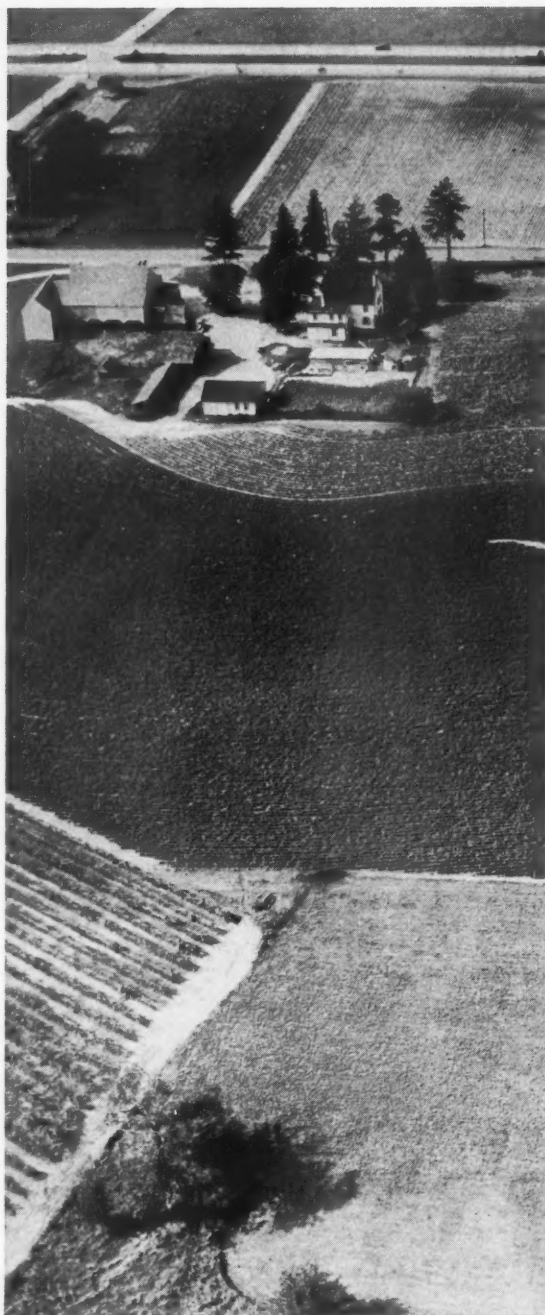
# Land For Living

**D**R. FIRMAN E. BEAR said we have in our country 1,904,000,000 acres of land on which we must depend. Of this vast area, more than one half has only limited value. About 150 million acres is desert, 600 million acres is semi-arid, and 300 million acres in a semi-humid state, which is affected by dry desert winds. The desert produces no useful vegetation, the semi-arid area yields grazing for one steer on an area of 25 to 75 acres. The semi-humid area offers marginal possibilities for grain-growing, with ups and downs from year to year, depending on weather cycles.

One answer, he said, including the desert, lies in irrigation. Now 25 million acres of arid and semi-arid land is being irrigated, with enough more water in sight for perhaps another 25 million acres. Cloud-seeding and sea water reclamation are possibilities for new water sources which we are now hopefully exploring. He said that those possibilities cannot be lightly dismissed, but neither can they be depended upon for any great agricultural expansion. Among the problems involved in sea water reclamation is the cost of production, and the cost of transporting this water to areas of crop production. The Department of the Interior estimates the cost of production by modern methods at about 60c per 1000 gallons, or \$200.00 per acre foot. Several acre feet are required for satisfactory crop production in arid areas. This cost is at the sea-shore, and does not consider its transportation inland and its elevation above sea-level. He said it will be a long time before much purified seawater gets far into the interior of the west.

Other suggestions have been offered, including transportation of Great Lakes water to semi-arid farming areas, storage of run-off waters behind dams or underground by infiltration.

He said that we may have to learn to get along with much less fresh water per person than is our present custom, and settlements along the sea shore may have to make use of seawater for purposes other than drinking, washing and irrigating.



Science has developed new methods to increase production which have enabled us to keep pace with population growth, and which have given us a feeling of confidence in our capacity to meet future problems. Scientific agriculture is now producing enough more food and fiber than is required that we have a serious surplus problem. Development of synthetic fibers from non-agricultural materials has released 25 million acres of cotton land for food production.

He said that the fertilizer industry now provides 22 million tons of chemical fertilizers and 20 million



tons of liming materials, and there are 500,000 tons of pesticides formulated and used each year in the United States. Production of these materials can be readily expanded to the degree which may be required. Antibiotics, hormones, gibberellic acid, and other new chemicals are coming into agricultural use, and stilbestrol puts extra pounds onto beef cattle. Pesticides, including soil disinfectants are increasing yields very markedly.

Breeding of plants for hybrid vigor, greater capacity to withstand drouth and cold, and to resist attacks from insects and disease organisms is going forward. Similar methods are employed in improving livestock for meat production. Farm machinery is continually being improved to do a more effective job, as is protective packaging and new techniques for preserving foods.

We are losing one million acres of good farm land each year to industry, city, suburban, highway, airport and similar developments. Our most promis-

ing possibility for increasing food of the kind we now enjoy lies in better use of manpower, machinery, and chemicals. By these means and through continued research, agricultural production should be able to keep pace with population growth up to the end of this century. After that we have as possibilities in coping with still more mouths to feed, the bringing of more land into production, and changing the eating habits of our people from the present high consumption of meat, eggs and milk to that of eating more grain as such. On that basis, he said, there is good reason to believe that we could produce enough food to feed 1 billion people, and to feed them well.

He said in closing, that it is high time that we develop an educational program designed to bring population under control, so that our resources can be developed for the benefit of a reasonable number of people.

Taken from a speech by Dr. Bear at the Fifth Annual California Fertilizer Conference.

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## Fifth Annual California Fertilizer Conference

A PROGRAM centered around potash problems and minor element deficiency symptoms with a banquet speech by Dr. Firman E. Bear provided plenty of "thinking material" for some 250 people who attended the Fifth Annual California Fertilizer Conference. The meeting was held on the campus of Fresno State College and was sponsored by Soil Improvement Committee of the California Fertilization Association.

Dr. Bear of the Soils Department, Rutgers University, New Brunswick, New Jersey, spoke on the subject "Land For Living."

President Jack Baker of the California Fertilizer Association outlined the importance of the program of work of the Association's Soil Improvement Committee, which sponsors the Annual Fertilizer Conference.

President A. E. Joyal and Dean Lloyd Dowler of the Agricultural Department of Fresno State College welcomed the delegates to the campus, and outlined the history of its recent growth.

Co-Chairmen J. H. Nelson and Earl R. Mog, both of Stockton, were in charge of the Conference program, with Nelson presiding. Formal papers were presented during the morning by Dr. Albert Ulrich, Plant Physiologist, University of Calif., Berkeley, on "Plant Analysis as a Guide to Fertilization"; "Soil Conditioners—Some of the Things Now Known About Their Effects on Soils and Plants," by Dr. R. E. Warnock, Agronomist, Cali-

fornia Spray-Chemical Corporation, Richmond; Robert Z. Rollins, Chief, California Bureau of Chemistry, Sacramento, on topics involving regulation of the sale of fertilizers and agricultural minerals; "Potash Responses in Deciduous Orchards" presented by Dr. Kiyoto Uriu, Department of Pomology, University of California, Davis, from a paper prepared by Dr. Omund Lilleland, Pomologist, University of California; and "Potash Sources and Products," by M. E. McCollam, Western Manager, American Potash Institute, Inc., San Jose.

Following luncheon the delegates were divided into two groups in separate adjacent rooms. Two panel groups, one on Potash and the other on Micro-nutrients, rotated between these two rooms. Audience participation in the discussions was lively, indicating keen interest in the subject matter. Those on the Potash Panel were Dr. J. E. Knott, Chairman, Department of Vegetable Crops, University of California, Davis, Moderator; Drs. W. E. Martin, T. W. Embleton, O. A. Lorenz, and Herman Timm, all of the University of California, and Forrest Fullmer, American Potash Institute, Inc., Newport Beach.

On the Micro-nutrients Panel were Dr. D. G. Aldrich, Jr., Chairman, Department of Soils and Plant Nutrition, University of California, Davis and Berkeley, Moderator; and Drs. John Lingle, Kiyoto Uriu, Walter Reuther, and Arthur Wallace, all of the University of California.

New  
Roads  
and  
the

## *Farm Chemicals Industry*

# PESTICIDE POTENTIAL

Dr. C. O. Eddy, Manager  
Development Department  
Niagara Chemical Division

**D**UE to the increased traffic on our highways and the increase in speed of the travelling public, safety is becoming relatively more important. At the same time, highway officials, and the public in general, have realized the advantage of creating beauty of a parklike nature along all our highways. More leisure on the part of more people, more people travelling on vacations on our highways, and an increased sense of aesthetic values have contributed to the advance in beautification of our highways. Economic factors, including high costs of equipment, and high costs and shortage of labor, necessitate a cheaper method of maintenance. It has been found that the use of chemicals, particularly pesticides, will assist in attaining these three objectives of safety, beauty, and economy.

The new interstate highway system, just now going into construction, will add 41,000 miles of highway and at least a million acres of rights-of-way that have to be maintained. It has been estimated that when this road system is finished there will be about 3 million acres of land under maintenance along our highways. At the present time, only a very small percentage of the rights-of-way is treated with chemicals. Here then is a huge frontier for the use of chemicals in the future.

In a very far-sighted move of the American Road Builders' Association in January 1955, a Subcommittee on Chemicals was formed within the Com-

mittee on Roadside Construction and Maintenance of that organization.

The active membership of this Committee includes people from American Road Builders' Association, National Agricultural Chemicals Association, several of its company members, professional people from colleges, universities, experiment stations, the United States Department of Agriculture, staff mem-

### ROADSIDE SPRAYING FOR WEED CONTROL



FARM CHEMICALS

bers from publications, Research or Sales people of other industries, members of garden clubs, etc.

In a survey recently made by this Committee, it has been clearly shown that only a small beginning has been made in the use of chemicals in this field of effort. Of the chemicals used, of course, herbicides are by far the most important; 2,4-D and 2,4,5-T being the major materials used. In the survey of 43 states, it was reported that 7.3 per cent of the mileage was treated with herbicides at a chemical cost of \$628,320.00 in 1956. The cost of insecticides for 2 per cent of this road mileage was reported to be \$68,848. Of course, none of these costs includes application or any other handling costs. The report showed no use of fungicides except minor applications in two or three states.

Some people who have expressed opinions about the future of chemical applications in this area believe that approximately one-third of the highway systems will use some method of chemical control within the next five years.

Mr. William C. Greene, Landscape Engineer for the State of Connecticut, estimates that in a program where they spent \$40,000 on fungicides and insecticides, they reaped a benefit of \$1,500,000 a year; and in spending \$50,000 a year on herbicides, they accumulated a saving of \$500,000 a year.

Mr. Wilbur Garmhausen, Chief Landscape Architect of the Department of Highways in Ohio has said that the state in 1956 sprayed approximately 75 per cent of the 16,000 miles of rural state highways, about half of it by contract and half by state spray equipment, at a cost of about \$222,647.00.

In the study in Ohio concerning mowing and the use of herbicides or a combination of them, Mr. Garmhausen finds that costs are gradually decreasing as more spray materials are used.

In many areas, a spring, a summer and a fall application of herbicides are required to get effective control of weeds at the start of the program, usually supplemented with one mowing at the end of the seeding season of the desirable grasses. Generally speaking, in the Northeast it seems that spraying

will eliminate one or two or possibly three mowings, leaving only one mowing necessary. In some cases, it has also been found that after a period of two years, applications can be reduced to two.

Mr. Nelson M. Wells, Director of the Landscape Bureau of the New York State Department of Public Works, states:

"The New York State Department of Public Works is planning to conduct a moderate program of herbicide work in 1957 along state highways for three purposes: to eliminate broad leaved weeds in turf areas and thus reduce the amount of required mowing, reducing or eliminating growth in a narrow strip along guide rails to save on mowing and the destruction of poison ivy and certain brush.

"The Department's Landscape Bureau will conduct a training school in the spring of 1957 for a few key men from each of the district organizations. They will be trained in the procedures and necessary precautions for this kind of work so they in turn will be able to train others in their respective districts to adequately carry on the program."

In other states, we find that there are programs underway such as that in Virginia. Kentucky is starting a program of controlling weeds with chemicals. North Carolina is just getting underway, and according to our survey many other states are getting interested in it. In fact, 32 of the 42 states surveyed have shown some use of chemicals.

The Subcommittee on Chemicals of the American Road Builders' Association's Committee on Roadside Construction and Maintenance will continue to function as its participating members, contributors, and guests offer their suggestions, guidance and help. The Subcommittee meets three times a year, the first meeting being in late January at the annual meeting of the ARBA. At the spring meeting in May in Washington, D. C., the Subcommittee attempted to bring together, for study, discussion and action, the more technical aspects of the problems associated with the use of chemicals along highways. A fall meeting is scheduled somewhere in the vicinity of New York.

Photos Courtesy Mr. Wilbur Garmhausen.

NOT SPRAYED



JUNE, 1957

SPRAYED



45



## Farm Chemicals Industry

## FERTILIZER OUTLOOK PART II

On this and following pages you'll find the second half of our story on the outlook for the fertilizer industry in connection with the new Federal Roadbuilding program. This includes the second half of the survey made by the American Roadbuilders' Association and some of the research that USDA is doing to determine the best vegetative cover for rights-of-way. The USDA story is reprinted from USDA publication *Agricultural Research*.

STATE	Hydraulic Seed and Fertilizer		Loosen Compacted Soil Prior to Seeding	Depth Topsoil Loosened
	With Mulch	Without Mulch		
ALABAMA	No	No	All Except Extreme Slopes	5-8"
ARIZONA	No	No	All Except Extreme Slopes	Varies With Conditions
CALIFORNIA	No	No	All Except Extreme Slopes	18"-2' 6" on Slopes
CONNECTICUT	Yes	Yes	Level Areas Medium Slopes	2"
DELAWARE	Yes	No	All Areas	3"
FLORIDA	No	No	On Level Areas	3"
GEORGIA	No	No	All	3"
IDAHO	No	No	No	None
ILLINOIS	No	No	All Except Extreme Slopes	2"
INDIANA	Yes	No	All Except Extreme Slopes	Variable
IOWA	Yes	Yes	All Areas	2" on Extreme Slopes
KANSAS	Yes	No	All	1" to 3"
KENTUCKY	Yes	No	All Except Extreme Slopes	1" & 3"
LOUISIANA	No	No	All Except Extreme Slopes	3"
MARYLAND	Yes	Yes	All Areas	3"
MASSACHUSETTS	Yes	Yes	All	2"
MICHIGAN	No	No	All Except Extreme Slopes	3"
MINNESOTA	—	No	All Except Extreme Slopes	2"
MISSISSIPPI	No	No	All Except Extreme Slopes	3"
MISSOURI	No	No	All Except Extreme Slopes	2"
NEBRASKA	No	—	—	2"



**A**GRICULTURAL research has a part in the roadbuilding program—to determine the best vegetative cover for the rights-of-way. This means studies on soils and plants to provide erosion control, safety, permanence, low-cost maintenance and beauty for these highways destined to be traveled by millions.

The United States Dept. of Agriculture is cooperating with highway planners and engineers in many states. Agricultural Research Service researchers are studying the roadside soil, water and plant adaptation problems. These constitute, in effect, a new kind of agriculture, with intensified problems in water diversion and runoff control.

## AGE-OLD SUBSOILS UNCOVERED

Rights-of-way will be cut to make these new paved roadways as level as possible. That means millions of tons of earth must be moved in making cuts and fills. This will uncover subsoils formed countless ages ago—normally unsuitable for cropping because they lack the structure and nutrients that make plants grow.

Yet, these exposed surfaces must be made to produce vegetative cover to prevent erosion. Road shoulders must be kept firm and smooth to provide safe emergency turnouts for motorists. Fills must not wash out to form dangerous gullies and ditches.

STATE	Hydraulic Seed and Fertilizer		Loosen Compacted Soil Prior to Seeding	Depth Topsoil Loosened
	With Mulch	Without Mulch		
NEVADA				
NEW HAMPSHIRE	Yes	Yes	All Except Extreme Slopes	2"
NEW JERSEY	Yes	Yes	All Except Extreme Slopes	3" or More
NEW MEXICO	No	No	No	None
NEW YORK	Yes	Yes	All Except Extreme Slopes	Surface Scratched 3"
NORTH CAROLINA	Yes	Yes	All Except Extreme Slopes	3"
NORTH DAKOTA	No	No	All Except Extreme Slopes	Surface Scratched
OHIO	No	No	All Except Extreme Slopes	1"
OKLAHOMA	No	No	All Except Extreme Slopes	3"
OREGON	Yes	Yes	Level Areas	3"
PENNSYLVANIA	Yes	No	Level Areas Medium Slopes	2"
RHODE ISLAND	Yes	Yes	Level Areas Medium Slopes	Surface Scratched
SOUTH DAKOTA	No	No	All Except Extreme Slopes	1"
TENNESSEE	—	—	—	—
TEXAS	Yes	No	All	2"
VERMONT	No	No	All Except Extreme Slopes	—
VIRGINIA	Yes	No	On Level Areas	3"
WASHINGTON	Yes	Yes	All Except Extreme Slopes	2"
WEST VIRGINIA	Yes	No	Level Areas Medium Slopes	2"
WISCONSIN	Yes	No	No	Not Specified
WYOMING	No	No	No	None



Erosion of cuts must be checked to keep eroding materials from damaging farm lands, or washing onto highways to endanger fast-moving cars. Vegetative cover is also needed to reduce repair and maintenance costs on the roads.

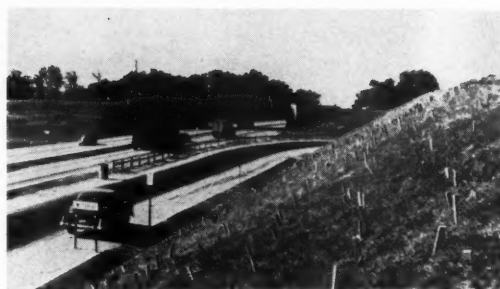
In solving these problems, agronomists, soil scientists and agricultural engineers rely on fundamental knowledge in their respective fields. But even more, they draw on past successes and failures in right-of-way maintenance practices, and practical application of their own efforts along highways that are already in use.

STATE	Method Seed Applied	Method Seed Covered	Seeding and Sprigging (Mo.)	Location Mulch Used	Rate and Materials Used/Acre
ALABAMA	Broadcast	Cultipacker	3-4-5-6-7-8-9-10-11	Slopes Only	Straw & Hay
ARIZONA	Broadcast			None	
CALIFORNIA	Broadcast	Mulch	No Choice	Slopes Only	Straw, 4-6 Tons/Acre
CONNECTICUT	Hydraulic	Brush Drags	3-4-5-6-8 1/2-9-10-11 1/2	—	2 Tons Hay
DELAWARE	Seed Drill	Seeder Equip. Mulch on Slopes	3-4-5-9-10	Slopes Only	Straw, Asphalt
FLORIDA	Broadcast	Cultipacker	All Months	All Areas	Straw, Hay, 3 Tons
GEORGIA	Seed Drill	Seeder Equip.	3-4-5-6-7-8-9	Slopes Only	Straw & Hay
IDAHO			3-4-9-10	Slopes Only	Straw, Hay, Sawdust
ILLINOIS	Any Approved Method	Cultipacker	3-4-8-9	All Areas	Straw, Hay, 3 Tons/Acre
INDIANA	Drill Hydraulic	Varies With Conditions	3-4-5-8-9-10	All Areas	Straw & Asphalt 2" in Depth
IOWA	Broadcast Drill, Hydraulic	Cultipacker Mulch on Slopes	3-4-5-8-9	Slopes Only	1 1/2 Tons Hay, Straw
KANSAS	Seed Drill	Seeder Equip.	Seed: 2 to 10 Sprig.: 4-5-6	Slopes Only	Straw, Hay, Asphalt
KENTUCKY	Drill Broadcast	Harrow, Mulch Cultipacker	3-4-5-8-9-10-11	All Areas	2 Tons Straw, Hay & Asphalt
LOUISIANA	Broadcast	Cultipacker	Anytime	None	Hay & Asphalt, 2 Tons Sawdust, 3"
MARYLAND	Broadcast Hydraulic	Cultipacker Mulch	4-5-6-9-10	Slopes Only	2 1/2 Tons, Straw, Hay, Asphalt
MASSACHUSETTS	All Methods	Seeder Equip.	4-5 6 7-8 9-10-11	Slopes Only	Hay, Peat, Wood Chips
MICHIGAN	Drill Broadcast	Mulch	4-5-8-9	All Areas	2-3 Tons of Straw or Hay
MINNESOTA	Drill Broadcast	Harrow & Seeder Equip.	7	Slopes Only	Straw, Asphalt
MISSISSIPPI	Broadcast	According to Engineer	4-5-6-7-8-9-10	—	Straw, Hay, Asphalt
MISSOURI	Broadcast	Mulch	2, 3, 4-8-9-10	All Areas	Straw, Hay, Peat, Tobacco
NEBRASKA	Drill Broadcast	Harrow & Seeder Equip.	3-4-5-8-9	Slopes Only	Straw, Asphalt

## SOIL PREPARED AND FERTILIZED

Soil preparation is the first step once a right-of-way has been graded. Then plant nutrients must be applied to freshly exposed subsoils.

Such soils, used in fills, are already well tilled and usually need little more than lime and fertilizer. Cuts often require surface working with tillage machines before they are fertilized and seeded. Careful mulching, as developed for erosion control on farms, has become standard practice to provide the microclimate favorable to germination and prevent seeds and soil from washing before roots form.



STATE	Method Seed Applied	Method Seed Covered	Seeding and Sprigging (Mo.)	Location Mulch Used	Rate and Materials Used/Acre
NEVADA					
NEW HAMPSHIRE	Broadcast Drill, Hydraulic	Harrow & Mulch	4-5-8-9	All Areas	Hay, Peat or Muck
NEW JERSEY	Drill Hydraulic	Mulch	1-2-6-7-12	Slopes	Hay, Asphalt
NEW MEXICO	None	None	None	None	None
NEW YORK	Any Not Injurious to Seed	Mulch	4-5-6-8-9-10-11	All Areas	3 Tons Straw or Hay & Asphalt
NORTH CAROLINA	Drill, Broadcast Hydraulic	Cultipacker Mulch	Any Time Conditions Permit	Slopes Only	Straw, Asphalt Emulsion
NORTH DAKOTA	Drill	Seeder Equip.	4-5-6-7-8-9-10	Certain Areas	2" Straw or Hay, Manure
OHIO	Drill Broadcast	Drilled or Raked 1"	Anytime Bed Can Be Made	All Areas	
OKLAHOMA		Seeder Equip.	2-3-4-5-6-9-10	None	None
OREGON	Drill Hydraulic	Seeder & Harrow Mulch, Cuts & Fills	2-3-4-5-8-9-10-11	Slopes Only	2 Tons Straw, Hay 1" Sawdust, Asphalt
PENNSYLVANIA	Broadcast Hydraulic	Mulch	3-4-5-6-8-9-10-11	All Areas	2½ Tons Straw or Hay
RHODE ISLAND	Drill Hydraulic	Seeder Equip. Mulch	4-5-8-9	All Areas	3 Tons Hay With Asphalt
SOUTH DAKOTA	Drill	Harrow	4-5-6-7-8-9-10	Not At All	
TENNESSEE	Rotary Seeder	All	3-4-5-6-7-8-9-10	All Areas	Hay, Straw, Asphalt
TEXAS	Drill Broadcast	Seeder Equip.	3-4-5 9-10-11-12	Sometimes Slopes	Some Straw, Asphalt
VERMONT	Drill	Mulch	5-6-9-10	Slopes Only	Hay
VIRGINIA	Hydraulic	Mulch	3-4-5-8-9-10	All Areas	Straw, Hay, Tobacco, 2 Tons/A
WASHINGTON	Hydraulic	Mulch	3-4-5-6-7-8-9-10-11	Slopes Only	Hay & Asphalt Peat & Muck
WEST VIRGINIA	Broadcast Hydraulic	Cultipacker Mulch	2-3-4-5-6-8-9-10	All Areas	Straw and Asphalt
WISCONSIN	Drill Broadcast	Cultipacker	5-6-8-9-10	Slopes Only	Straw, Hay
WYOMING	Drill	Seeder Equip.	4-5-9-10	None	



STATE	Mulch Thru Ditch Areas	Hay Used As Mulch and Seed	Small Grain As Cover Crop	Sodding Used	Fert. and Lime Areas To Be Sodded
ALABAMA	Yes—If Seeded	Occasionally	Yes	Steep Banks—In Ditches	Yes—Before Sodding
ARIZONA	No	No	No	No	No
CALIFORNIA	Yes	Occasionally	Yes	No	No
CONNECTICUT	Yes	Yes	Yes—Mowed Left in Place	No	No
DELAWARE	Yes	No	Yes	Steep Banks—In Ditches	No
FLORIDA	Yes	Yes	Yes	Yes	No
GEORGIA	No	Yes	No	Yes	Yes
IDAHO	Rarely	Occasionally	No	No	No
ILLINOIS	Yes—If Seeded	Yes	Yes	Yes—Steep Banks	Yes
INDIANA	Yes—Where Seeded	Occasionally	No	Yes—Steep Banks	Yes
IOWA	Yes	Occasionally	Yes—Mowed Left in Place	Steep Banks—In Ditches	No
KANSAS	Yes	Yes	Yes	Yes	Yes
KENTUCKY	Yes	Occasionally	Yes	Yes	Yes—And Seeding
LOUISIANA	Yes—If Seeded	Yes	Yes	Yes—Ditches and Sandy Soil	Yes—Fert.
MARYLAND	No—Sod	Occasionally	No	Yes	Only Below pH 5.5
MASSACHUSETTS	Yes	Occasionally	Yes—Sandy Soil	Special Areas	
MICHIGAN	Yes	Yes	No	Yes—Steep Banks	No
MINNESOTA	Yes	Yes	Occasionally	Steep Banks	No
MISSISSIPPI	Yes	Yes	Yes	No	Yes
MISSOURI	Yes	Yes	No	Steep Banks—In Ditches	Seeding & Sprigging
NEBRASKA	Occasionally	Yes	Occasionally	Yes	Occasionally





Use of imported topsoil to establish roadside cover has limited practical application. This is justified only in extraordinary situations. Sodding is even more expensive.

Site conditions govern choice of vegetation. Tough grasses and legumes that can be mowed short are best for road shoulders. Once established, they withstand the 100-per cent water runoff from pavements with little danger of ditching or gullying. Vigorous-growing grass and leguminous covers have proved wise for slopes and banks. Once started, these plants are at least partly self-supporting—important since fertilization and mowing of long, steep

STATE	Mulch Thru Ditch Areas	Hay Used As Mulch and Seed	Small Grain As Cover Crop	Sodding Used	Fert. and Lime Areas To Be Sodded
NEVADA					
NEW HAMPSHIRE	Yes	Yes	Yes	Steep Banks—In Ditches	Yes
NEW JERSEY	Yes	Yes	Yes	Yes	Yes
NEW MEXICO	No	No	No	No	No
NEW YORK	Yes—If Seeded	Rarely	Yes—Maint. Mowing	Steep Banks—In Ditches	Yes
NORTH CAROLINA	No	Occasionally	Yes—Mowing	No	No
NORTH DAKOTA	No	Occasionally	Yes—Mowing	Steep Banks—In Ditches	No
OHIO	Yes—If Seeded	No	Yes—Mowing	Yes—In Ditches	Yes
OKLAHOMA	No	No	No	Yes—Steep Banks	Yes
OREGON	Yes—If Seeded	Rarely	No	No	No
PENNSYLVANIA	Yes	Occasionally	Yes—1 Bu./Acre	Yes—Problem Soil Areas	Yes
RHODE ISLAND	Yes—If Seeded	Yes	No	No	No
SOUTH DAKOTA	No	No	Yes—Mowing	No	No
TENNESSEE	Sometimes	Yes	Yes	Yes	Yes
TEXAS	No	Occasionally	Sometimes	Steep Banks	Yes
VERMONT	Yes	Yes	Yes	Sometimes	No
VIRGINIA	Yes	Yes	Yes—Mowing	Yes	Seeding & Sprigging
WASHINGTON	No	Yes	No	No	No
WEST VIRGINIA	Yes—If Seeded	Occasionally	No	No	No
WISCONSIN	Yes	No	No	Steep Banks—In Ditches	No
WYOMING	No	No	No	No	No



slopes are difficult. Legume root systems help prevent erosion (and plants often provide feed and cover for birds).

Planting of trees on highway banks should be done with caution. Such plantings do not always provide the ground cover necessary to prevent erosion. In fact, by shading grasses and robbing soil of nutrients and water, trees may tend to discourage grasses that might otherwise grow.

### MANY SUITABLE COVERS FOUND

Several varieties of legumes and grasses have been found suitable for highway ground cover, and the

STATE	Plants For Erosion Control	Fert. For Maintenance	Amt. and Type Fert. Used For Maint.	Maint. Fert. Applied By	Maint. Applications Made in (Months)
ALABAMA	No	Entire Projects	8-8-8 or 6-8-8 600 Lbs./Acre	Broadcast	6-7-8
ARIZONA	Yes—Fert. 1st Growing Season	No	15-5-0	None	
CALIFORNIA	Yes	As Warrant	11-8-4 Pelleted 15-30 Lbs./1000 Sq. Ft.	Broadcast	Spring and Summer
CONNECTICUT	Yes—Fert. 1st Season	Yes—1st and 2nd Year	Nit. 50 Lbs./Acre Fert. 800 Lbs./Acre	Hydraulically	3-4-5-6-8-9-10
DELAWARE	Yes	Occasionally		Seeder Drill	3-4-9-10
FLORIDA	Beautification	As Warrant	Complete Fertilizer	Broadcast	All Months
GEORGIA	Yes	Occasionally	Complete	Broadcast	4 and 8
IDAHO	No	Yes	None	None	
ILLINOIS	Yes	No	None	—	Seeding—3-4-8-9
INDIANA	Yes	No	None	None	
IOWA	No	No	None	None	
KANSAS	Yes	Occasionally	—	With Seeder	—
KENTUCKY	Yes	Occasionally	—	Broadcast	
LOUISIANA	No	Yes	8-8-8 500-800 Lbs./Acre	Broadcast Hydraulically	1-2-3-4-9-10
MARYLAND	Yes	Trouble Areas	50 Lbs. N./Acre 13-13-13	Air Blowers	3-4-5-6-9-10
MASSACHUSETTS	Yes	Yes	Complete 1000 Lbs./Acre	Broadcast	3-4-5 8-9-10
MICHIGAN	Yes	As Warrant	Complete Fertilizer	Broadcast	3-4-5-8-9-10-11
MINNESOTA	—	Yes	No	None	—
MISSISSIPPI	Yes	Occasionally	800 Lbs. 5-10-5 300 Lbs. Amm. Nit.	—	Occasionally
MISSOURI	Yes	Occasionally	Complete Fertilizer	Broadcast	
NEBRASKA	No	No	No	None	—

search has only begun. At the Agricultural Research Center, Beltsville, Md., and on State highways in the East and South, sericea lespedeza and kudzu in limited use, have proved well adapted for hillsides too steep to mow. Annual lespedeza is also useful to give quick cover while more permanent plants are getting established.

Tall fescue grass shows marked promise over a wide area as a stable, lasting ground cover. Other grasses such as zoysia, Bermuda and common redtop have been used successfully. Covers of other types, including vines and shrubs, are under study.



STATE	Plants For Erosion Control	Fert. For Maintenance	Amt. and Type Fert. Used For Maint.	Maint. Fert. Applied By	Maint. Applications Made in (Months)
NEVADA					
NEW HAMPSHIRE	Yes	Entire Projects	Complete Fertilizer	Broadcast	4-5-9-10
NEW JERSEY	—	Yes	Complete 500 Lbs./Acre	Broadcast	3-4
NEW MEXICO	No	No	No	None	—
NEW YORK	Rarely	As Warrant	10-6-4 40 Lbs. Nit./Acre	Broadcast and Hydraulically	3-4-5-8-9
NORTH CAROLINA	No	As Warrant	Complete Fertilizer 10 Lbs./100 Sq. Yds.	Broadcast and Hydraulically	4-5-9
NORTH DAKOTA	No	No		None	
OHIO	Yes—Fert. Before Planting	As Warrant	200 Lbs. 1-1-1 30 Lbs. Nitrogen	Broadcast Hydraulically	5-9
OKLAHOMA	No	No	None	None	
OREGON	Yes—Not Fert.	As Warrant	320 Lbs. 10-16-8/Acre	Broadcast and Hydraulically	2-3-4-7-8-9-10
PENNSYLVANIA	Yes	As Warrant	10-20 Lbs. 5-10-5, 8-16-16	Broadcast Hydraulically	Spring and Fall
RHODE ISLAND	Yes	No	None	None	
SOUTH DAKOTA	No	No	None	None	
TENNESSEE	No	Occasionally	4-12-4 500 Lbs./Acre	Broadcast	3-4-5-6-7 8-9-10
TEXAS	Yes	Yes	Complete	Broadcast	4-5-9-10
VERMONT	No	No	—	None	—
VIRGINIA	Yes—Feed 2nd Season	Trouble Areas	Common Fert. 10-20-10	Hydraulically Drill	3-4-5-8-9-10
WASHINGTON	Yes	No	None	None	
WEST VIRGINIA	Yes & Fert.	Trouble Areas	10-6-4 400 Lbs.	Hydraulically	2-3-4-5-6-8-9-10-11
WISCONSIN	Yes	No	None	None	None
WYOMING	No	No		None	

# changing farm policy

By John Harms

*Editor's Note: Two months ago we predicted exclusively for you the current uproar over farm programs. As part of our new service to keep you ahead of government actions which affect your markets, we told you in advance of the undercurrent of opposition—which now has broken into the open.*

*The following report is another in the series to give you the essential facts in the struggle to evolve a new federal farm program. The new farm laws to be written will, in large measure, be a result of the proposals and counter-proposals now being made.*

*Whatever the outcome is—we deem it a service to our industry to keep you posted on changing federal policy.*

TWO years ago this summer, Secretary Ezra Taft Benson won a major victory from Congress. The revolutionary Agricultural Act of 1954 was signed into law by President Eisenhower.

The new law removed from beneath five of the six so-called basic farm commodities—corn, cotton, wheat, peanuts, and rice—the fixed price support floor of 90 per cent of parity. Until that happened, this rigid floor was considered untouchable. The new law provided instead a system of “flexible” price supports which could drop down to 75 per cent of parity—the new support floor. Armed with this new program, the Secretary felt confident many of agriculture’s ills would be solved.

Two years later, during which time the multi-billion dollar Soil Bank program was set up, Agriculture Department officials, congressmen, and farm leaders agree that, if anything, the ills of agriculture have become more acute. Secretary Benson himself has indicted the present program as a failure.

In May, the growing awareness that drastic changes must be made was put forth in black and white by Secretary Benson. His public statement touched off what is destined to become one of the great domestic policy debates of this day.

Pointing out that the relentless march of technology has provided agriculture with a “new dimension,” the Secretary declared in a now-famous letter to the Senate Agriculture Committee: “Controls are not effective in reducing overall agricultural production . . . Last year we had acreage allotments and marketing quotas in operation for all basic crops for which they were eligible. We had the beginning of the soil bank and we had a severe drought in the Southwest. Yet overall farm production reached an all-time record.”

On price supports, Mr. Benson said: “The Agricultural Act of 1954 was an improvement over the legislation which preceded it; it was a forward step . . . But these benefits will largely disappear as soon as our stocks are moved or sharply reduced.”

While the Secretary offered no specific solutions to Congress, he has often referred to them in public statements. As verified with Agriculture Department officials, Mr. Benson’s new approach—to be emphasized in the months ahead—is this:

Remove any and all price support floors from beneath farm commodities. Provide the Agriculture Secretary with complete discretion to set supports at any level—if he feels they are necessary. When support prices are set, they should be limited to “protective” levels, for stop-loss purposes only, rather than pegged at levels designed to bolster farm income.

Coupled with complete authority on price supports, the plan is to gradually increase acreage allotments for corn, wheat, cotton, peanuts, rice and tobacco (the sixth “basic” commodity). The theory is that without supports—or with very low ones—prices would move lower toward more competitive levels. The lower market prices would take away the incentive to produce greater surpluses. Many farmers, who couldn’t afford to produce at such prices



would be forced to produce other commodities where prices are better.

The most vocal immediate reaction to Benson's charge that the farm program is breaking down, came from the powerful House Appropriations Committee. In reporting out the bill to provide the USDA with funds for the year beginning July 1, the Committee blasted away both at Mr. Benson's request for record spending authority (see Viewing Washington) and his "errors" in administering the farm laws. It declared:

"The belief of the present Secretary of Agriculture that lower price supports would reduce farm production and increase domestic consumption has not been borne out, as shown by the records of his own Department . . . Despite price support reductions of 20 per cent for corn, production in 1956 was 159 million bushels more than in 1952. Likewise, support reductions for such commodities as barley, flaxseed, rye, sorghums, and soybeans resulted in greater production."

But perhaps more significant to the farm chemicals industry is the Committee's position on acre allotments.

While it disagrees almost vehemently with Mr. Benson on price supports—it agrees wholeheartedly with his point that acreage allotments have failed. Much of this failure, says the Committee, is Congress' fault because of the way the laws were written. The Committee said: "It is the opinion of the majority of the Committee that an entirely new legislative approach must be developed if the present conditions are to be corrected . . . Any new program should let the farmer farm."

In an unusual departure from tradition, the Committee took pains to outline what its members think to be the answer. While this Committee cannot make basic law changes, it can suggest such changes. Its suggestion, sharply divergent from Mr. Benson's approach, is establishment of a domestic parity, or "two-price" system for major crops. Under this, cotton, wheat and other growers would be guaranteed 100 per cent of parity on that part of production which is consumed domestically in normal channels. Surplus production would be sold at world or other market levels.

As these two points of view clash in the headlines, a rank outsider is coming up fast. This proposal would provide compensatory payments to cotton growers. Sponsored by Rep. Poage of Texas, it's a sort of "Brannan Plan" with the difference between a low level of support and 90 per cent of parity paid to the farmer out of the Treasury. The American Farm Bureau Federation, and Secretary Benson, look at the Poage proposal as "the one to beat." Feeling is that if such direct payments are approved for cotton, other producers will clamor for like treatment.

Thus, the new farm fight takes shape this spring. More proposals and counter-proposals will be made. But while no major change is expected to be made this year, the current maneuvering certainly points to basic revisions a year from now—in election year 1958.

## Federal Agencies Endorse Gypsy Moth Spraying

THREE Government agencies have joined in a public statement, issued by the U. S. Department of Agriculture, endorsing the safety of methods established for conduct of the cooperative State-Federal spray program in the Northeast against the gypsy moth, a destructive pest of forest and shade trees.

Cited by USDA as the reason for this joint statement is the fact that a number of reports have been published during the past few weeks which may have unduly alarmed the public concerning alleged hazards to both human health and wildlife from using DDT to eradicate the gypsy moth.

The three agencies are the Public Health Service of the Department of Health, Education, and Welfare; the Fish and Wildlife Service of the Department of the Interior; and the Agricultural Research Service of the Department of Agriculture. On the basis of many years' experience with DDT, they emphasized that this insecticide when used in the manner specified for eradication of the gypsy moth is not injurious to man or farm animals, offers slight if any hazard to birds and other wildlife, and is not likely to have any serious effect on fish populations in the sprayed areas.

Aerial spraying with DDT is now underway in southern New York and in some parts of northern New Jersey and northeastern Pennsylvania. This is a cooperative State-USDA program, fully supported by agricultural agencies of the three States concerned as well as by the Federal Government. It is aimed at eradication of leaf-eating gypsy-moth caterpillars from almost 3 million acres, much of which is heavily forested land in New York State.

The DDT dosage and spraying methods used in the program have been developed and tested extensively throughout the United States over the past dozen years. Responsible officials concerned with public health, fish and wildlife conservation, and agricultural research and pest control, both in the Federal Government and in many States, agree that aerial spraying of forested land and urban shade trees with DDT at the rate of 1 pound per acre is a sound insect-control practice.

Since the destruction of trees by the gypsy moth offers a potentially serious threat to hardwood forests in the eastern U. S., and consequently to the conservation of wildlife in this region, the Fish and Wildlife Service is in accord with current State-USDA efforts to rid the area of the gypsy moth.

USDA regulatory officials emphasize that before a program of this kind is undertaken, it is thoroughly reviewed by research entomologists, public health officials, and fish and wildlife agencies—Federal, State, and local—concerned with the affected areas. Spraying is finally undertaken only after detailed procedures have been carefully worked out and jointly agreed to by the responsible State and Federal agencies.

# The Farmer's Best Buy

## FERTILIZER

Feeder livestock.....	Up 11%
Farm real estate.....	Up 7%
Motor vehicles.....	Up 7%
Motor supplies.....	Up 5%
Farm Machinery.....	Up 5%
Farm real estate taxes per acre...	Up 5%
Farm supplies.....	Up 4%
Seed.....	Up 4%
Wage rates.....	Up 4%
Building & fencing materials.....	Up 3%
Feed.....	Up 2%
Fertilizer (April 15).....	No change

THE U. S. Department of Agriculture this month provided the fertilizer industry with one of its most potent farm sales tools: the latest report of the relative costs of major farm production items.

The Department reports: "Fertilizer is the only important farm-production cost item that has not had a net increase in price in the last year.

"Prices paid by farmers for (other) goods and services used in production are about 5 per cent higher this spring than they were a year ago."

You get the impact of this from the table provided in USDA's Farm Cost Situation—comparing this spring's costs with those of a year ago.

The Department points out that farmers' production cost rates in general have more than doubled since 1940, but some have increased more than others. Farm wage rates, for example, have risen by more than 300 per cent—whereas prices of fertilizer and gasoline have advanced about 53 per cent and 64 per cent, respectively.

The official analysis of fertilizer prices reports that prices of most fertilizers are slightly higher this year than last, but prices of nitrogen fertilizers are somewhat down. The decline in nitrogen fertilizers stems chiefly from the greatly expanded capacity for producing synthetic nitrogen, the USDA says. "Although extensive drought and the soil bank program have tended to limit further increases in demand for fertilizer—there is no indication that the demand has subsided to any appreciable extent." (For Soil Bank implications for fertilizer, see Viewing Washington.)

"Fertilizer is a better buy today than it was in 1940," states the USDA. By way of comparison with prices farmers receive for their products, the USDA points out that the prices received index for farm products is more than twice as high as they were in 1940—compared with the fertilizer prices paid of only 53 per cent higher.

Recent developments regarding the use of nitrogen fertilizers, the USDA says, illustrate the type of adjustment that farmers are making to reduce their per unit costs. Although they used about as much commercial nitrogen in 1956 as in 1955, USDA re-

ports they used "considerably more" anhydrous ammonia and urea and "considerably less" sodium nitrate and ammonium sulfate.

The percentage change of farm consumption from 1955 to 1956 was: Sodium nitrate, minus 11 per cent; ammonium sulfate, minus 21 per cent; ammonium nitrate-limestone mixtures, minus 14 per cent; ammonium nitrate, minus 17 per cent; urea, plus 33 per cent; ammonia, anhydrous, plus 22 per cent; and ammonia, aqua, plus 30 per cent.

Further insight into farmers' approach to investment in capital items in a period of relatively low farm prices is given by the USDA:

"The total quantity of capital items used *per farm* has risen from one year to the next without exception throughout the last 20 years, despite large changes in prices received for farm products, prices paid for capital items, and net incomes of farmers.

"Apparently, farmers have decided that expansion in farm size and use of more machinery, fertilizer, and other materials to increase output and apply new or improved production methods would be profitable each year despite wide variations in prices and income."

"Looking ahead," the USDA concludes, "a critical question is, Will market demand for farm products increase as rapidly as total farm production?"

"The rate of expansion in total production in the future undoubtedly will depend to a large extent upon how rapidly the quantities of capital goods used in farming increase. It is not likely that reduction in the use of capital goods will be profitable on many farms even if market demand fails to keep pace with farm production. Probably, opportunities are still available for reducing costs per unit of production on many farms by using additional capital goods to apply improved production methods."

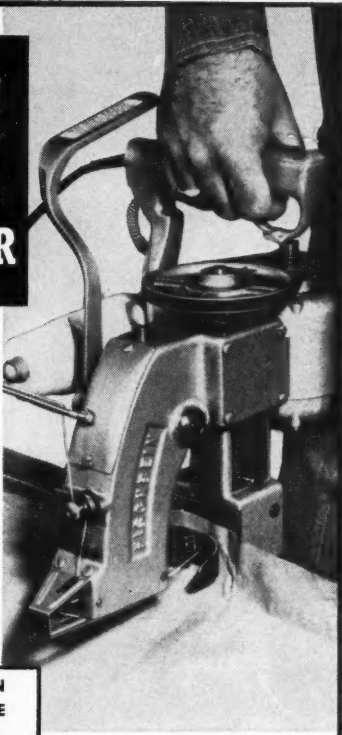
Turning to pesticides, the Agriculture Department reports that manufacturers' prices of most pesticides were about the same in the spring of 1957 as they were 6 months or a year earlier. Prices of copper sulphate declined from the high level reached a year ago, whereas prices of a group of insecticides, including aldrin, lindane and toxaphene, advanced. Lindane prices this spring are about 50 per cent higher than in the fall of 1956.

Production and consumption of pesticides in the U. S. both attained new records in 1956, the USDA notes, and 1957 supplies will be "ample." But because of the difficulty in anticipating insect or disease outbreaks, "preferred materials may not always be available at a given time and place and in the quantities desired."

Some of the increased pesticide consumption the USDA says was caused by the use of more insecticides on state and national forests by government agencies to control insects that either destroy trees directly or spread diseases. Also, several million acres of land were sprayed as part of public-supported control programs to halt the spread and reduce the numbers of the gypsy moth, Mediterranean fruit fly, and grasshoppers. These programs expanded the consumption of pesticides but did not add directly to farmers' costs, the Department states.

## FISCHBEIN

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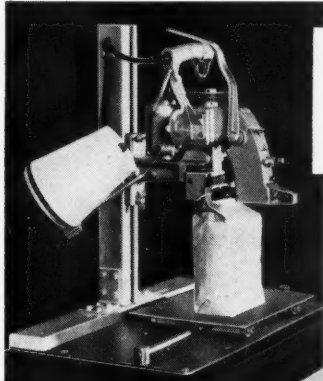
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CARRIAGE  
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## FARM CHEMICALS

### Equipment & Supplies

#### STURTEVANT OPERATES MICRONIZER PILOT PLANT

Sturtevant Mill Co. reports that a Micronizer pilot plant is now in operation, where four fluid energy mills will handle experimental and custom fine grinding and classification to sizes ranging from 20 microns to smaller than one micron.

Capacity of the units, which depends upon the size of the mill and the kind of material ground, ranges from a half-pound to a ton or more an hour. Experimental grinding will be offered at the cost of set-up and labor.

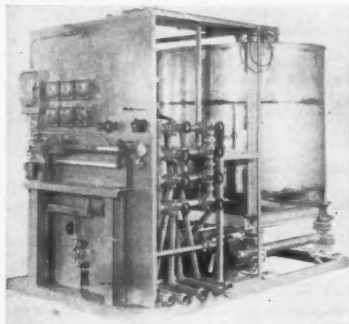
Built after years of intensive research and development with many types of fluid energy mills, the new pilot plant answers a long-standing industry need for facilities able to handle grinding and classification in the micron range, according to William Doyle, president of Sturtevant.

#### IPFS HAS NEW LIQUID FERTILIZER UNIT

Indian Point Farm Supply has announced a new five-ton batch liquid fertilizer unit which will produce 200 tons per day.

Ingredients are weighed in the stainless steel tank. Potash and urea are introduced with fiber glass cup elevator.

The firm says that all control valves for mixing, pumping to storage and loading out spray



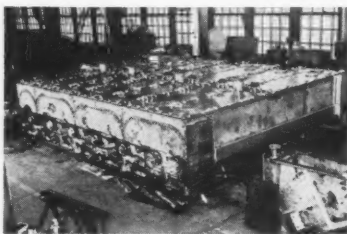
trucks are within easy reach of the operator at the control panel.

The unit can be purchased separately or complete with all storage tanks, plumbing and load-out lines.

#### G-W CONTINUOUS HORIZONTAL CONTACTOR

A new continuous horizontal contactor which features a unique slow motion agitation action is being manufactured by Gifford-Wood Co.

Designed for large-scale extracting operations in chemical



processing industries, the G-W unit may also be used for leaching, ion exchange, decoloring, deodorizing, crystallizing, washing and flotation exchange operations. In addition, the company says the contactor can serve as a reactor for liquids with a solid catalyst.

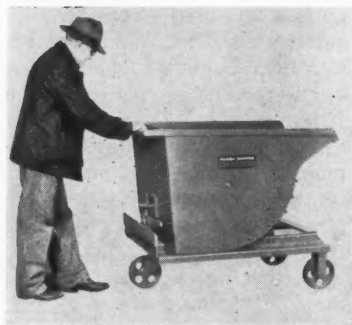
For further information about the G-W continuous contactor, CIRCLE 183 ON SERVICE CARD

#### SELF-DUMPING HOPPER FOR NARROW AISLES

Designed for handling bulk materials, scrap and waste through narrow aisles and in confined areas, a new self-dumping hopper only 30 inches wide is now available from Roura Iron Works, Inc.

The hopper will pass through ordinary doors with ease, and has a capacity of ten cubic feet.

Mounted on three casters, the hopper can be pushed manually or transported by fork truck. A push bar at the top aids manual



movement, and the single rear caster is swiveled to permit sharp turns around tight corners. Empty weight is 450 lbs., length is 49 inches and height, 40 inches.

Details may be obtained by CIRCling 184 ON SERVICE CARD

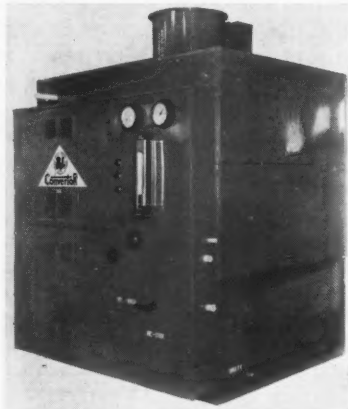
#### B & L CONVERTOR FROM BARNARD & LEAS MFG.

Addition of the "B&L Convertor" to its line of liquid fertilizer processing units is announced by the Chemical Plants Div. of Barnard & Leas Mfg. Co., Inc.

The Convertor is a complete package, continuous flow liquid nitrogen unit for converting commercial grade anhydrous ammonia to aqua ammonia solutions. The unit consists of a plate type evaporative cooling system with horizontally mounted cooling pump; level controlled after-cooler basin; tubeaxial induction cooling fan; specially designed B&L instantaneous reaction jet; specific gravity hydrometer; thermometer and pressure gauge completely assembled and pre-piped in an all steel frame and housing. It is available with either manual or fully automatic controls.

Complete information is available by

CIRCling 185 ON SERVICE CARD



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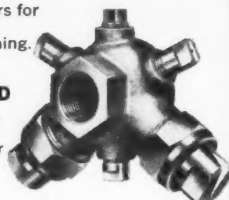
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# by Dr. Melvin Nord

# PATENT REVIEWS

## PESTICIDES

**U. S. 2,776,237**, issued Jan. 1, 1957 to William A. Clark and Henry L. Morrill, assigned to Monsanto Chemical Co., discloses a method of stabilizing tetraalkyl pyrophosphate insecticides against hydrolysis, by the addition of acetic anhydride.

**U. S. 2,776,921**, issued Jan. 8, 1957 to Sidney Melamed, assigned to Rohm & Haas Co., discloses the use of unsaturated alkylphenones as insecticides.

**U. S. 2,776,922**, issued Jan. 8, 1957 to Albert A. Somerville and assigned to R. T. Vanderbilt Co., Inc., describes synergistic zinc mercaptobenzothiazole and zinc dimethyl dithiocarbamate fungicidal compositions.

**U. S. 2,777,791**, issued Jan. 15, 1957 to Frederick C. Visor, George L. McNew, George Koch, and Alvaro Goenaga, assigned to Chas. Pfizer & Co., Inc., discloses a synergistic mixture of a streptomycin-type antibiotic and a water-insoluble copper fungicide, which has both anti-fungal and enhanced anti-bacterial activity.

**U. S. 2,777,792**, issued Jan. 15, 1957 to Karl Lutz and Otto Jucker, assigned to Sandoz A.G., discloses the use of certain thionophosphoric acid esters as pesticides.

**U. S. 2,777,793**, issued Jan. 15, 1957 to Clifton R. Neumoyer and assigned to The Pennsylvania Salt Manufacturing Co., discloses the use of 5-chloro-2-hydroxy- $\alpha$  (trichloromethyl) benzyl alcohol as a fungicide.

**U. S. 2,777,794**, issued Jan. 15, 1957 to Eugene E. Kenaga, assigned to The Dow Chemical Co., discloses the use of polychlorinated pyrene as a parasiticide.

**U. S. 2,778,768**, issued Jan. 22, 1957 to George L. Brown and Edward A. Nolan, assigned to Rohm & Haas Co., discloses pesticidal compositions containing ethylenebisdithiocarbamates and hydroxy ethyl cellulose.

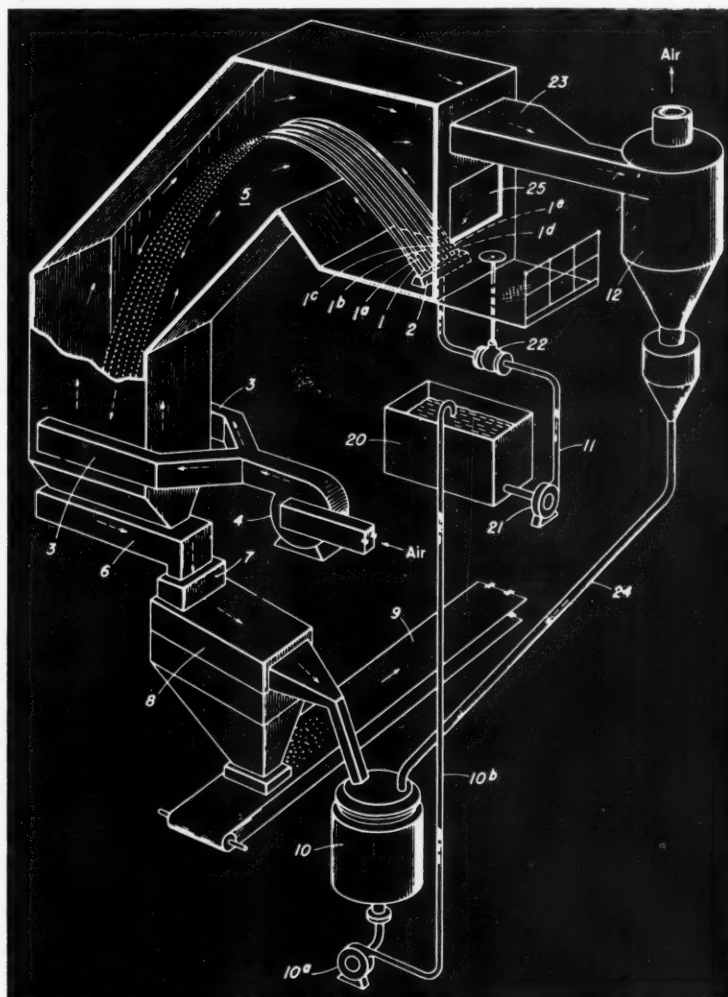
## FERTILIZERS

**U. S. 2,776,828**, issued Jan. 8, 1957 to Manley C. Marcellus, Teynham Woodward, and Josiah Work, assigned to Food Machinery & Chemical Corp., describes a process for the pelletization of

phosphate shale to produce feed for electric phosphate smelting furnaces for the production of elemental phosphorus or phosphate compounds.

**U. S. 2,774,660**, issued Dec. 18, 1956 to Lucien H. Cook, Alexander W. Hodge, Jr., and John Colonias, and assigned to Chemical Construction Corp., describes a process for the prilling or granulation of nitrogen fertilizers such as ammonium nitrate and urea. The fertilizer is heated to a temperature just above its melting point and the molten material is jetted into thin unidirectional streams through a countercurrent flow of drying gas. The unidirectional stream is obtained by forcing the liquid through a parallel set of long tubes at high pressure, as shown in Fig. 1, below.

Figure 1



## ... PATENTS

U. S. 2,776,872, issued Jan. 8, 1957 to Charles L. Norton, Jr., and assigned to The Babcock & Wilcox Co., describes a process for the thermal fixation of nitrogen at high temperatures and low pressures in stationary bed heaters.

U. S. 2,778,712, issued Jan. 22, 1957 to Paul Caldwell and assigned to Cannac Research & Development Co., describes a process for the production of citrate-soluble tricalcium phosphate by the ammoniation of the acidic aqueous medium resulting from the nitric acid digestion of fluorine-containing phosphate rock.

U. S. 2,778,722, issued Jan. 22, 1957 to Clinton A. Hollingsworth, assigned to Smith-Douglas Co., Inc., describes a process for the defluorination of phosphate rock by calcination, in which the fluorapatite lattice is

loosened by treatment with an hydrochloric acid.

U. S. 2,776,198, issued Jan. 1, 1957 to Forrest L. Turbett and assigned to Spencer Chemical Co., describes a process of preparing a phosphate fertilizer and animal feed supplement. According to the inventor, this process produces a fertilizer product having a total plant food content higher than that of any other fertilizer material now commercially available. The products are in the NPK range 5-50-0 to 5-70-0.

The process consists of the reaction of a phosphatic material with ammonium phosphate or a monobasic alkali metal phosphate at elevated temperature and atmospheric pressure. The resultant granular or glassy fused product is cooled and recovered for use directly as a fertilizer or an animal feed supplement, or for use as an intermediate in the production of other fertilizers.

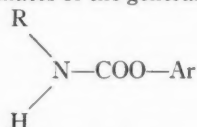
## HERBICIDES

U. S. 2,777,762, issued Jan. 15,

1957 to Burton V. Toornman and assigned to The Dow Chemical Co., discloses the use of 2,6-dichloroanisole as an herbicide.

## PLANT GROWTH REGULANTS

U. S. 2,776,196, issued Jan. 1, 1957 to Hans Gysin and Enrico Knusli, assigned to J. R. Geigy A.G., discloses the use of O-aryl carbamates of the general formula



(where Ar represents the phenyl or naphthyl radical, and R is hydrogen or a lower straight chain radical) as plant growth regulants having a very marked inhibitory influence on the growth of plants.

U. S. 2,776,197 (same date, inventors, and assignee) discloses the use of O-aryl carbamates having the same general formula as above, where Ar represents an aryl radical substituted by alkyl, alkoxy, nitro, or halogen, for stimulating or inhibitory influence on the growth of plants.

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## CHEMICALS

### HERCULES PESTICIDE REVEALED AT ACS MEET

A new pesticide was revealed at the American Chemical Society's recent meetings in Miami by a representative of Hercules Powder Co. The new chemical, called Hercules 528, will be available commercially to some of the nation's farmers this year, according to Dr. W. R. Diveley, a Hercules research chemist.

Hercules reports that the pesticide is already recommended by various state authorities for use on cotton. Results indicate it will be useful on citrus and deciduous fruits, grapes, vegetables and ornamentals. It also has been effective in controlling cattle ticks.

The chemical was developed at Hercules' Research Center and Agricultural Chemicals Laboratories, and for the past three years has been extensively evaluated in greenhouse and field tests by Hercules, USDA and state agricultural research labs. Chemically, Hercules 528 is described as dithiophosphate of dioxane.

Some of the pests it effectively controls are leafhoppers, thrips, leaf miners and mites of various types, Hercules reports.

The pesticide will be available to use in either dusts or sprays.

### DAVISON MARKETS 3 NEW FERTILIZERS

Davison Chemical Co. reports it is marketing three new fertilizers for farm use.

Dav-Gro is a high analysis water soluble plant food, with

20-20-20 formula, which also carries essential minor elements and minerals.

Start-Rite, also instantly water soluble, bears the 10-52-8 formula. It was especially designed and formulated as a fertilizer for preparing transplanting solutions, the firm reports.

Davco Gold is a 15-15-15 plant food.

### REPORT EFFECT OF TABUTREX REPELLENT



Dr. Willis N. Bruce, associate entomologist, Illinois Natural History Survey, sprays the legs of a cow with Tabutrex in one of the many tests conducted with the repellent.

Glenn Chemical Co. reports it recently received USDA approval for its insect repellent, Tabutrex.

Before the discovery of Tabutrex, biting flies were responsible for reducing weight gains of cattle by as much as one-half pound per day and milk production was cut from ten to 20 per cent on cows heavily attacked by these pests, the company reports. Tests have shown that Tabutrex drives flies away and keeps them away for long periods of time after a single application.

In one of the many tests con-

ducted with the chemical, Tabutrex was applied to six calves. Eight hours after the spraying, total number of house and stable flies was found to be 13. On an untreated group of six calves, the count was 129 total house and stable flies.

### STAUFFER CHEM. MAKES PASTE FORM 2,4-D

A novel paste form of 2,4-D is now being made by Stauffer Chemical Co. and marketed in the North Central and Pacific Northwest states.

Stauffer said that the most important feature of the 2,4-D paste is its low volatility. It has been safely used, experimentally, to kill broad leaf weeds between grape rows and on lawn areas adjacent to susceptible vegetable plantings. It has also been successfully applied in roadside sprayings, where a wide range of weeds are encountered, but where low herbicide volatility is essential to preclude damage to ornamentals in or along farmsteads.

### VAPAM GETS USDA APPROVAL FOR ALL CROPS

Vapam last month was approved for use on all crops, reports Stauffer Chemical Co. Heretofore the soil fumigant has been sold only for application to seed beds, tobacco, ornamentals and turfs.

Stauffer has already established national distribution channels for Vapam, but now in light of the USDA food-crop approval, the company is expanding its farm marketing program.

## ORGANIC FERTILIZER MATERIALS

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# PEST REPORTS

## ALFALFA WEEVIL MOST ACTIVE FORAGE PEST

THE alfalfa weevil, long established in the West, was first reported in the Eastern United States in 1952. It is now known to be from South Carolina to New York.

By early May, the alfalfa weevil was causing damage in most of the eastern states where it is established. In South Carolina the weevil is now known to be in Florence, York and Newberry counties; the heaviest damage was reported from York county.

Spread continues in North Carolina and during early May the first county west of the Blue Ridge Mountains in that state to become infested was reported. This was Alleghany which is in the northwestern part of the state. Untreated fields from Granville county west to Stokes county averaged one larva and 3 to 9 newly emerged adults per sweep.

The alfalfa weevil was the outstanding insect problem in Virginia during early May with damage being heavy in most counties where controls were not applied. Heavy feeding was reported from Jefferson and Berkeley counties, West Virginia. Larval populations reached a peak in central Maryland and damage was heavy in unsprayed alfalfa fields.

During late April almost total losses of first-growth alfalfa were reported from several places near Bridgeville, Delaware. Damage was reported as moderately heavy in New Castle county, to severe in most of Kent and Sussex counties in fields where controls were not applied. By early May alfalfa weevil eggs were plentiful in stems of alfalfa in Pennsylvania and larvae and adults were easily collected in the south central area of the state.

In some of the Western states the alfalfa weevil was also very active. Populations as high as 5 adults per sweep were reported from Vale and Ontario, Oregon. No hatching had been noted by the first of May. Adults were active throughout the alfalfa fields of the upper Snake River area of Idaho. Surveys showed the insect to be common in all the major alfalfa-growing areas in the southern part of the state.

The pea aphid which caused severe damage to alfalfa in 1956 is active over a wide range, but apparently populations, in general, are lower than last year. In Virginia, populations were high in both alfalfa and clover fields with controls necessary in some instances. Other Eastern states had mostly light to moderate populations with numbers beginning to build up in early May.

The heaviest pea aphid populations in Illinois were in the southwestern section of the state. Heavy infestation and damage was reported from Livingston and Grundy counties, Missouri. In early May populations remained high on alfalfa and crimson clover in Tensas and Bossier parishes, Louisiana. In Oklahoma the pest was beginning to build up rapidly.

### EUROPEAN CORN BORER SURVIVAL HIGH IN AREAS

The European corn borer which in 1956 caused an estimated loss of over 119½ million dollars in field corn has apparently survived the winter in sufficient numbers in various areas to develop potential damaging infestations.

In Minnesota mortality for the overwintering larvae averaged 18 per cent as compared with 23 per cent in 1956. The number of

*Presented in cooperation with the Economic Insect Survey Section, Plant Pest Control Branch, Agricultural Research Service, USDA.*

larvae surviving in that state, particularly in the southwest and central districts, is sufficient to develop into damaging populations under favorable conditions.

In the southeastern part of South Dakota overwintering survival averaged 85 per cent, but fortunately the number of larvae entering hibernation was very light. Counties reporting survival counts in North Dakota listed a range of 80 to 85 per cent. Iowa reports an average count of 2,972 borers per acre in 32 Boone county fields. This is only 14 per cent of the populations present in the fall of 1956.

The potential is less than 1954 or 1955 but greater than any other year since 1951. With favorable weather conditions corn borer damage in Iowa could be greater than 1956 but would not be expected to reach that of 1954. European corn borer survival in the central area of Illinois averaged 77 per cent while the average in the north central area was 72 per cent. Survival of nearly 80 per cent of the overwintering larvae was recorded in Jefferson and Dane counties, Wisconsin.

Overwintering European corn borer larvae were found to be exceptionally abundant in old corn stalks in the Hudson Valley of New York. The borer is expected to be a major pest of early corn in New York this spring. By the latter part of April adults were abundant in Delaware and emergence was about half complete in North Carolina.

### OTHER INSECT ACTIVITY

By early May English grain aphid populations in Kansas were present in all wheat and barley fields surveyed. Counts ranged from 4 to 300 per 25 sweeps which were the highest in the past four years. The pest was common in east central Oklahoma counties averaging 20-50 per linear foot

of row in small grain. Some damage by the pest resulted to barley in Graham county, Arizona.

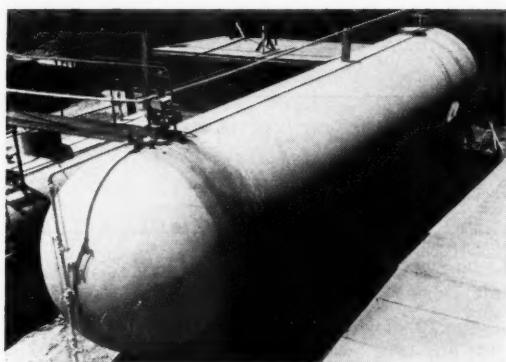
The green peach aphid was reported as being more abundant on peach trees in the lower Yakima Valley of Washington this spring than for the last several years. This pest was also reported on peaches from several areas in Utah.

European red mite control was warranted in Vincennes, Indiana, by the first of May. In Ohio, the egg hatch was very heavy with some difficulty of control being experienced in the southern area. Hatching was under way by late April in New York, Illinois, Pennsylvania and Oregon. The pest was building up in untreated orchards in Massachusetts.

The Colorado potato beetle by early May was causing damage to Irish potatoes in Granville county, North Carolina. Injury to potatoes in eastern Virginia was light and scattered. Adults were numerous in Delaware and Missouri. Spider mites were causing foliage damage to strawberries in the Orleans, Indiana, area. Mites

were responsible for injury to strawberry plants in eastern Virginia and infestations were reported from Massachusetts and New York.

Cotton boll weevils were becoming active early in May in Texas, Louisiana, Mississippi and Georgia. Cage survival tests at Tallulah, Louisiana, showed .22 per cent, May 10 this year. Same date comparison .78 in 1956; .36 in 1955 and 1.62 in 1954. At Waco, Texas survival percentage through May 3 was 3.76 compared with 0.04 in 1956 and 0.76 in 1955. Survival tests at Florence, South Carolina through May 10 showed a survival percentage of 1.76 compared with 6.14 in 1956 and 1.16 in 1955, same date each year. Only one weevil was found in 15 fields examined in Florence county, as of May 10. Bollworms were causing square damage to cotton in the lower Rio Grande Valley by the first of May. Cutworms were damaging cotton in Texas coastal counties and in Mississippi delta counties where some control was necessary.



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# STATISTICS

## REPORT ON LIME SALES FOR 1956

Sales of lime for the year January through December, 1956 totaled 9,176,673 short tons, compared to 9,229,832 short tons for the same period of 1955, according to reports by producers to the Bureau of Mines, U. S. Dept. of the Interior.

The Bureau reported that 228,313 tons were for agricultural use, compared with 262,753 tons in 1955.

The report excludes output of plants producing less than 10,000 tons a year.

## KY. MIXED FERTILIZER SALES RISE 6 PER CENT

Sales of mixed fertilizer in Kentucky during 1956 rose almost six per cent over the preceding year, reaching 440,000 tons, according to a report from the Department of Feed and Fertilizer, Kentucky Agricultural Experiment Station.

Straight materials tonnage, however, decreased 11 per cent from 1955, amounting to 92,000 tons. Tonnage of phosphate and

potash materials declined 18 per cent and 11 per cent respectively, while tonnage of nitrogen materials increased 11 per cent.

Total tons of fertilizer sold, 532,000 tons, represents an increase of a little over 2 per cent.

Notable among the mixed fertilizer grades which showed substantial increases were 4-12-8, 5-20-20, 6-12-12, 6-12-18, 10-10-10 and 12-12-12.

## SUPER SHIPMENTS BELOW A YEAR AGO

Shipments of superphosphate and other phosphatic fertilizers during February totaled 155,579 tons, a decrease of 2 per cent from the volume shipped during January.

Stocks held by producing plants as of February 28 totaled 414,922 tons, about the same as those reported as of January 31 and 5 per cent lower than February 29, 1956.

## 1st QUARTER POTASH DELIVERIES REPORTED

A total of 1,162,142 tons of potash salts containing an equivalent of 685,917 tons of  $K_2O$  was delivered during the first quarter of 1957 by the eight major Amer-

ican producers, according to the American Potash Institute. This represents an increase of over 4 per cent in salts and  $K_2O$  over the corresponding period in 1956.

Deliveries for agricultural purposes in the U. S., Canada, Cuba, Puerto Rico and Hawaii were down 17,954 tons  $K_2O$  or 3 per cent under last year.

## FERT. SALES OFF SHARPLY IN CONN. LAST YEAR

Sales of commercial fertilizer in Connecticut during the year ended June 30, 1956, amounted to 76,660 tons, smallest tonnage since 1944 and 7,834 tons less than in the previous year. More than 50,900 tons of 70 different grades of mixed goods were sold during the year.

Part of the decrease was accounted for by the drop in tonnage of vegetable meals used as fertilizer on tobacco.

The sales figure was reported by H. J. Fisher, chief chemist of the Connecticut Agricultural Experiment Station, in the Report of Commercial Fertilizer Inspections for 1956.

# Production — February, 1957

Compiled from Government Sources

Chemical	Unit	February		January
		1957	1956	1957
Ammonia, synth. (anhydrous).....	s. tons	294,103	286,743	302,504
Ammonia liquor, coal & coke ( $NH_3$ content).....	pounds	12,910,330	2,974,230	3,303,256
Ammonium nitrate, fert. grade (100% $NH_4NO_3$ ).....	s. tons	172,094	166,974	172,198
Ammonium sulfate				
synthetic (technical).....	s. tons	96,665	104,395	83,783
coke oven by-product (incl. amm. thiocyanate).....	pounds	142,831,654	158,226,272	161,544,303
BHC (Hexachlorocyclohexane).....	pounds	5,603,790	5,964,043	7,836,225
Gamma content.....	pounds	797,289	899,911	1,236,403
Calcium arsenate (commercial).....	s. tons	901	1,053	*744
Copper sulfate (gross).....	s. tons	5,424	—	5,704
DDT.....	pounds	9,311,169	10,742,191	10,878,405
2,4-D Acid.....	pounds	2,759,080	2,500,072	3,042,246
esters and salts.....	pounds	2,191,622	2,093,147	2,427,334
esters and salts (acid equiv.).....	pounds	1,534,666	1,654,742	1,758,410
Lead arsenate (acid and basic).....	s. tons	1,030	560	1,095
Phosphoric acid (50% $H_3PO_4$ ).....	s. tons	351,157	313,691	*337,694
Sulfur, native (Frasch).....	l. tons	—	476,313	—
Recovered.....	l. tons	—	37,100	—
Sulfuric acid, gross (100% $H_2SO_4$ ) <sup>2</sup> .....	s. tons	1,312,547	1,350,401	*1,386,063
Superphosphate (100% APA).....	s. tons	215,474	243,934	*219,855
Normal and enriched (100% APA).....	s. tons	131,944	149,320	138,422
Concentrated (100% APA).....	s. tons	64,950	75,965	65,484
Other phos. fertilizers (incl. wet-base goods).....	s. tons	18,580	18,649	*15,949
2,4,5-T Acid.....	pounds	277,588	403,557	286,064
Urea (total primary production).....	pounds	78,968,764	66,383,100	84,360,000

\* Revised. <sup>1</sup> Preliminary Figures. <sup>2</sup> Includes data for government owned privately operated plants.



# FERTILIZER MATERIALS MARKET

## New York

May 20, 1957

**Sulfate of Ammonia.** Producers have been able to effect a good movement in the last thirty days. With the steel production headed downward, stocks are not as burdensome as they were 60 days ago. No price changes are noted.

**Ammonium Nitrate.** Producers expect shipments to increase during the next 30 days when the demand for ammonium nitrate will be at its peak. Weather conditions in certain parts of the country have not been too favorable for planting operations which has held back shipments in some cases.

**Urea.** Since the price of domestic urea was recently advanced \$5 per ton, producers report shipments moving well with demand increasing from the fertilizer and industrial trade.

**Nitrogenous Tankage.** Some producers have announced a price schedule for the coming fertilizer season with liberal discounts for taking the material early in the season. The prices range from \$2.75 to \$3.25 (\$3.34 to \$3.95 per unit N), f.o.b. production points, according to the delivery time wanted.

**Castor Pomace.** With one major producer out of production, little castor pomace is being produced and the price remains the same at \$45.50 per ton, f.o.b. production point. Some imported material was recently reported sold.

**Organics.** There has been some limited buying in organic fertilizer materials to fill out late season needs, and prices in most cases remained firm. It is expected, with the end of the current fertilizer season in sight, there will be an easier tendency displayed shortly. Tankage and blood are selling at about \$5 per unit of ammonia (\$6.08 per unit N), f.o.b. Eastern production points. Soybean meal for prompt shipment was quoted at \$44 per

ton in bulk, f.o.b. Decatur, Ill. Linseed meal remained firm because of the limited supply, but cottonseed meal was slightly easier in price for nearby shipment as feed buying lagged.

**Fish Meal.** The new fishing season is approaching and some fish factories are still carrying over a good supply of fish meal from last season. Very little imported material arrived recently because of the surplus of domestic material. The market is about \$137, f.o.b. fish factories for fish meal.

**Bone Meal.** Little change was noted in bone meal and buyers from both the fertilizer and feed trade have adopted a hand-to-mouth buying policy. Last sales were made on the basis of \$60 per ton, f.o.b. production points. Some imported feeding grade bone meal was offered at about \$65 per ton at Northern ports.

**Hoof Meal.** Last sales were made on the basis of \$5.75 per unit of ammonia (\$6.99 per unit N), f.o.b. Chicago, with demand limited.

**Superphosphate.** Some producers have announced a price advance in this material because of increased costs of production. Stocks are ample at all points but triple superphosphate was said to be moving well.

**Potash.** Producers have announced prices for the new season and they are substantially the same as last season with few changes. With another large producer recently starting production, competition is expected to be keen in the sale of potash.

## Philadelphia

May 20, 1957

While raw materials are seasonally moving fairly well, the general price situation remains practically unchanged. It is reported, however, that there has been slight price shading in some areas, involving mixed fertilizers. It is thought that the tonnage of com-

plete mixtures this year will fall behind last season.

**Sulfate of Ammonia.** The situation is quiet, and while inventories have been materially reduced, there is no shortage of supplies. Quoted price remains at \$32 per ton.

**Ammonium Nitrate.** While the price situation continues the same, reports would indicate that production and inventories have both somewhat declined.

**Nitrate of Soda.** Prices continue to be listed at \$42.50 per ton in bulk, and \$47 in bags, for domestic production; and \$46 bulk, and \$49.50 in bags, for the Chilean grade. Supplies are sufficient to meet requirements.

**Blood, Tankage, Bone.** Market is more or less quiet with little demand. Blood is listed at \$5.25 per unit ammonia (\$6.38 per unit N), in New York area, and \$6 per unit (\$7.29 per unit N), Chicago. Tankage is quoted at \$4.50 to \$5 per unit ammonia (\$5.47 to \$6.08 per unit N), here in the East, and \$6 (\$7.29 per unit N), in the West. Bone meal is quiet at \$60 per ton. Nitrogenous tankage continues at \$3.25 to \$4 per unit ammonia (\$3.95 to \$4.86 per unit N), depending on location.

**Fish Scrap.** The new fishing season will commence in a few weeks and the market should then assume some activity. Price is still indicated as \$137 per ton for scrap and \$140 for meal, although there are rumors of higher prices in some directions, but not confirmed by us.

**Superphosphate.** The normal grade is still listed at 90 cents to 93 cents per unit A.P.A., and triple grade at 98 cents per unit.

**Potash.** The supply is satisfactory, and while currently quoted at 36 cents per unit  $K_2O$ , one producer has announced contemplated change of prices to range from  $34\frac{1}{2}$  cents per unit  $K_2O$  in July to  $36\frac{1}{2}$  cents per unit through April—for muriate of potash in bulk.

## CLASSIFIED ADVERTISING

### NEW RATES...

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Help wanted, positions wanted, used machinery and business opportunities are now charged at only 15 cents per word, \$2.50 minimum. Count box number as five words.

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umn inch, minimum of one inch. Ads over the minimum are accepted only in multiples of one half inch.

For prompt results, send your classified ads to Farm Chemicals, 317 N. Broad St., Philadelphia 7, Pa.

Closing date: 10th of preceding month

### HELP WANTED

**WANTED:** Experienced young man, Production Manager, farm chemicals in upper Midwest. State qualifications. Address "600," care FARM CHEMICALS, 317 N. Broad St., Philadelphia 7.

**WANTED:** Experienced Fertilizer Man. Must have background of office management and cost-accounting plus knowledge of fertilizer plant operations. Address "605," care FARM CHEMICALS, 317 N. Broad St., Philadelphia 7.

### FOR SALE

**FOR SALE:** Aluminum Tanks 18,000 and 24,000 gal; Steam Tube Dryers 4' x 30', 6' x 30'. WE BUY YOUR SURPLUS. Perry Equipment Corp., 1430 N. 6th St., Phila. 22, Pa.

**FOR SALE:** Ribbon Mixers 56 to 336 cu. ft.; Hammer Mills 20 to 75 HP; also glass lined tanks, dryers, etc. Perry Equipment Corp., 1430 N. 6th St., Philadelphia 22, Pa.

## FOR SALE

Complete set of equipment for manufacturing and bagging fertilizer. Including 1 ton Stedman mixing unit, 400' 20" belt conveyor, 2 Hough payloaders, payloaders scales, bagger, sewing machine, conveyors to loading dock, etc. All equipment is now in operation and is standard in every respect—not "Rube-Goldberg." Many more items too numerous to mention. All for \$12,000. Will finance. Address "610" care FARM CHEMICALS, 317 N. Broad St., Phila. 7.

## Suppliers' Briefs

**Dorr-Oliver Inc.** has opened a new office at 5356 Keepport Drive, Pittsburgh 36, Pa. Richard M. Sibley of the Eastern Industrial Div. has been transferred from Stamford, Conn. to the new office.

**Fabricated Metals, Inc.** has formed a wholly-owned subsidiary corporation, Fabricated Metals Western Export, Inc. to sell liquid fertilizer plants and storage, transportation and injection equipment throughout North and South America.

**The Frank G. Hough Co.** Frank G. Hough, founder and chairman of the board, has just announced his retirement. A pioneer in the bulk materials handling and tractor-shovel fields, Hough designed and sold his first hydraulic shovel attachment while vice president and general manager of Blair Mfg. Co., Chicago, in 1922. In 1931 he acquired Blair Mfg. and in 1933 The Frank G. Hough Co. was incorporated.

In announcing his retirement Mr. Hough said that while his plans for the future are not definite, he hopes to remain in the business of manufacturing.



Hough

## EVERYDAY

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### FARM CHEMICALS HANDBOOK

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Philadelphia 7, Pa.

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organic conditioner

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FARM CHEMICALS

# Ashcraft-Wilkinson Co.

**Fertilizer  
Materials**



**Feeding  
Materials**

## ALL FERTILIZER MATERIALS

FOREIGN AND DOMESTIC

**Agricultural Chemicals**

**Nitrogen Compounds**

**Organic Ammoniates**

**Sulphur**

**Potash**

**Exclusive Distributors : DUVAL SULPHUR AND POTASH COMPANY  
ESCAMBIA CHEMICAL CORPORATION**

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BRANCHES:  
NORFOLK, VA.  
CHARLESTON, S. C.  
JACKSON, MISS.

CABLE ADDRESS:  
ASHCRAFT

BRANCHES:  
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COLUMBUS, OHIO  
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But maybe the House committee in making their decision just didn't understand the situation. Had they taken time to investigate the functions of BDSA they might have realized what a serious mistake they were making. For instance they would have found out that BDSA, in effect, is the "voice of



# Buyers' Guide

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Ashcraft-Wilkinson Co., Atlanta, Ga.

## AMMONIA—Anhydrous and Liquor

American Cyanamid Co., New York City  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Commercial Solvents Corporation, New York City  
E. I. duPont de Nemours & Co., Wilmington, Del.  
Escambia Chem. Corp., Pensacola, Fla.  
Grand River Chem. Div., Deere & Co., Tulsa, Okla.  
Mississippi River Chem. Co., St. Louis, Mo.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Phillips Chemical Co., Bartlesville, Okla.  
Sinclair Chemicals, Chicago, Ill.  
Sohio Chemical Co., Lima, O.

## AMMONIUM NITRATE

American Cyanamid Co., New York City  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Commercial Solvents Corporation, New York City  
Escambia Chem. Corp., Pensacola, Fla.  
Monsanto Chem. Co., St. Louis, Mo.  
Mississippi River Chem. Co., St. Louis, Mo.  
Phillips Chemical Co., Bartlesville, Okla.

## AMMONIUM SULFATE

See Sulfate of Ammonia

## AMMONIUM SULFATE NITRATE

Atkins, Kroll & Co., San Francisco, Calif.

## BAGS—BURLAP

The Burlap Council, New York City  
Chase Bag Co., Chicago, Ill.

## BAGS—COTTON

Chase Bag Co., Chicago, Ill.

## BAGS—Multiwall-Paper

Chase Bag Co., Chicago, Ill.  
Hudson Pulp & Paper Corp., N.Y.C.  
Kraft Bag Corporation, New York City  
Union Bag—Camp Paper Corp., New York City

## BAGS—Dealers and Brokers

Ashcraft-Wilkinson Co., Atlanta, Ga.

## BAG PRINTING MACHINES

Schmutz Mfg., Louisville, Ky.

## BAG CLOSING MACHINES

Dave Fischbein Co., Minneapolis, Minn.

## BAG FILLING MACHINES

E. D. Coddington Mfg. Co., Milwaukee, Wisc.  
Kraft Bag Corporation, New York City  
Stedman Foundry and Machine Co., Aurora, Ind.  
Union Bag—Camp Paper Corp., New York City

## BHC AND LINDANE

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Pennsylvania Salt Mfg. Co., of Wash., Tacoma, Wash.

## BIN LEVEL CONTROLS

Stephens-Adamson Mfg. Co., Aurora, Ill.  
Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.

## BIN DISCHARGERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

## BONE PRODUCTS

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Jackie, Frank R., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## BORAX AND BORIC ACID

American Potash & Chemical Corp., Los Angeles, California  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## BOX CAR LOADERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

## BROKERS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Jackie, Frank R., New York City  
Keim, Samuel D., Philadelphia, Pa.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## BULK TRANSPORTS

Baughman Mfg. Co., Jerseyville, Ill.  
Highway Equipment Co., Cedar Rapids, Ia.

## CALCIUM AMMONIUM NITRATE

Atkins, Kroll & Co., San Francisco, Calif.

## CALCIUM ARSENATE

American Agricultural Chemical Co., N. Y. C.

## CALCIUM NITRATE

Atkins, Kroll & Co., San Francisco, Calif.

## CAR PULLERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

## CARS AND CART

Stedman Foundry and Machine Co., Aurora, Ind.

## CASTOR POMACE

Ashcraft-Wilkinson Co., Atlanta, Ga.

## CHEMISTS AND ASSAYERS

Shuey & Co., Inc., Savannah, Ga.

## CHLOROBENZILATE

Geigy Agr. Chems. Div. Geigy Chem. Corp. N.Y.C.

## CHLORDANE

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Velsicol Chemical Corp., Chicago, Ill.

## CLAY

Ashcraft-Wilkinson Co., Atlanta, Ga.

## CONDITIONERS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
H. J. Baker & Bro., New York City  
Jackie, Frank R., New York City  
Keim, Samuel D., Philadelphia, Pa.  
National Lime & Stone Co., Finlay, Ohio  
U. F. Graphite Co., Saginaw, Mich.

## CONVEYORS

Baughman Mfg. Co., Jerseyville, Ill.  
Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.  
Finco Inc., North Aurora, Ill.  
Joy Mfg. Co., Pittsburgh, Pa.  
Link-Belt Co., Chicago, Ill.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Sturtevant Mill Co., Boston, Mass.

## COPPER SULFATE

Tennessee Corp., Atlanta, Ga.

## COTTONSEED PRODUCTS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Jackie, Frank R., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## DDT

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Geigy Agr. Chems. Geigy Chem. Corp., N.Y.C.  
Monsanto Chem. Co., St. Louis, Mo.

## DIAZINON

Geigy Agr. Chems. Geigy Chem. Corp., N.Y.C.

## DIELDRIN

Ashcraft-Wilkinson Co., Atlanta, Ga.

## DILUENTS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

## DITHIOCARBAMATES

Berkshire Chemicals, New York City

## DRUMS—STEEL

Vulcan Steel Container Co., Birmingham, Ala.

## ELEVATORS

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.  
Link-Belt Co., Chicago, Ill.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Stephens-Adamson Mfg. Co., Aurora, Ill.

## ENDRIN

Velsicol Chemical Corp., Chicago, Ill.

## ENGINEERS—Chemical and Industrial

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## FERTILIZER—Liquid

Clover Chemical Co., Pittsburgh, Pa.

## FERTILIZER—MIXED

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.  
International Min. & Chem. Corp., Chicago, Ill.

## FILLERS

Bradley & Baker, N. Y. C.

## FISH SCRAP AND OIL

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Jackie, Frank R., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## FULLER'S EARTH

Ashcraft-Wilkinson Co., Atlanta, Ga.

## FUNGICIDES

American Agricultural Chemical Co., N. Y. C.  
Tennessee Corp., Atlanta, Ga.

## GIBBERELLIC ACID

Eli Lilly & Co., Indianapolis, Ind.  
Merck & Co., Rahway, N. J.

## HEPTACHLOR

Velsicol Chemical Corp., Chicago, Ill.

## HERBICIDES

American Cyanamid Co., New York City  
American Potash & Chemical Corp., Los Angeles, California  
Monsanto Chem. Co., St. Louis, Mo.

## HOPPERS & SPOUTS

Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## IMPORTERS, EXPORTERS

Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## KAOLIN

Thomas Alabama Kaolin Co., Baltimore, Md.

## INSECT REPELLENT

Glenn Chemical Co., Inc., Chicago, Ill.

## INSECTICIDES

American Agricultural Chemical Co., N. Y. C.  
American Cyanamid Co., New York City  
American Potash & Chemical Corp., Los Angeles, California  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Berkshire Chemicals, New York City  
Fairfield Chem. Div., Food Mach. & Chem. Corp., New York City  
Geigy Agr. Chems., Div. Geigy Chem. Corp., N. Y. C.  
Pennsylvania Salt Mfg. Co., of Wash., Tacoma, Wash.  
Velsicol Chemical Corp., Chicago, Ill.

## IRON CHELATES

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.  
Tennessee Corp., Atlanta, Ga.

## IRON SULFATE

Tennessee Corp., Atlanta, Ga.

## LABORATORY SERVICES

Wisc. Alumni Research Foundation, Madison, Wisc.

## LEAD ARSENATE

American Agricultural Chemical Co., N.Y.C.

## LIMESTONE

American Agricultural Chemical Co., N.Y.C.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
National Lime & Stone Co., Finlay, Ohio

## MACHINERY—Acid Making and Handling

Monarch Mfg. Works, Inc., Philadelphia, Pa.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## MACHINERY—Acidulating

Stedman Foundry and Machine Co., Aurora, Ind.

## MACHINERY—Grinding and Pulverizing

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.  
Bradley Pulverizer Co., Allentown, Pa.  
Finco Inc., North Aurora, Ill.  
Gruender Crusher and Pulverizer Co., St. Louis, Mo.  
Poulsen Co., Los Angeles, Calif.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

# Buyers' Guide

## MACHINERY—Material Handling

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.  
Clark Equip. Co., Construction Mach. Div., Benton Harbor, Mich.  
Finco Inc., North Aurora, Ill.  
Grundler Crusher and Pulverizer Co., St. Louis, Mo.  
Hough, The Frank G. Co., Libertyville, Ill.  
Joy Mfg. Co., Pittsburgh, Pa.  
Link-Belt Co., Chicago, Ill.  
Poulsen Co., Los Angeles, Calif.  
Stedman Foundry and Machine Co., Aurora Ind.  
Stephen-Adamson Mfg. Co., Aurora, Ill.  
Sturtevant Mill Co., Boston, Mass.  
Tractomotive Corp., Deerfield, Ill.

## MACHINERY—Mixing and Blending

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.  
Grundler Crusher and Pulverizer Co., St. Louis, Mo.  
Munson Mill Mach. Co., Utica, N. Y.  
Poulsen Co., Los Angeles, Calif.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## MACHINERY—Mixing, Screening and Bagging

Poulsen Co., Los Angeles, Calif.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## MACHINERY—Power Transmission

Link-Belt Co., Chicago, Ill.  
Stedman Foundry and Machine Co., Aurora, Ind.

## MACHINERY

### Superphosphate Manufacturing

Link-Belt Co., Chicago, Ill.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## MALATHION

American Cyanamid Co., New York City

## MANGANESE SULFATE

Tennessee Corp., Atlanta, Ga.

## MANURE SALTS

Potash Co. of America, Washington, D. C.

## METHOXYCHLOR

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.

## MINOR ELEMENTS

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.  
Tennessee Corporation, Atlanta, Ga.

## MIXERS

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.  
Munson Mill Mach. Co., Utica, N. Y.  
Rapids Machinery Co., Marion, Iowa  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## NITRATE OF SODA

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
International Min. & Chem. Corp., Chicago, Ill.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## NITROGEN SOLUTIONS

American Cyanamid Co., New York City  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Commercial Solvents Corporation, New York City  
Escambia Chem. Corp., Pensacola, Fla.  
Lion Oil Company, El Dorado, Ark.  
Mississippi River Chem. Co., St. Louis, Mo.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Phillips Chemical Co., Bartlesville, Okla.  
Sinclair Chemicals, Chicago, Ill.  
Sohio Chemical Co., Lima, O.

## NITROGEN MATERIALS—Organic

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Jackle, Frank R., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## NOZZLES—Spray

Monarch Mfg. Works, Philadelphia, Pa.  
Spraying Systems Co., Bellwood, Ill.

## PAIS—STEEL

Vulcan Steel Container Co., Birmingham, Ala.

## PARATHION

American Cyanamid Co., New York City  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Monsanto Chem. Co., St. Louis, Mo.

## PHOSPHATE ROCK

American Cyanamid Co., New York City  
American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## PHOSPHORIC ACID

American Agricultural Chemical Co., N. Y. C.

## PLANT CONSTRUCTION—Fertilizer and Acid

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.  
Link-Belt Co., Chicago, Ill.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## POTASH—Muriate

American Potash & Chemical Corp., Los Angeles, California  
Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.  
Bonneville, Ltd., Salt Lake City, Utah  
Bradley & Baker, N. Y. C.  
Duval Sulphur & Potash Co., Houston, Tex.  
International Min. & Chem. Corp., Chicago, Ill.  
National Potash Co., N. Y. C.  
Potash Co. of America, Washington, D. C.  
Southwest Potash Corp., New York City  
United States Potash Co., N. Y. C.

## POTASH—Sulfate

American Potash & Chemical Corp., Los Angeles, California  
International Min. & Chem. Corp., Chicago, Ill.  
Potash Co. of America, Washington, D. C.

## PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

## PYROPHYLLITE

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

## REPAIR PARTS AND CASTINGS

Stedman Foundry and Machine Co., Aurora, Ind.

## SCALES—Including Automatic Baggers

Exact Weight Scale Co., Columbus, O.  
Stedman Foundry and Machine Co., Aurora, Ind.

## SCREENS

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.  
Finco Inc., North Aurora, Ill.  
Ludlow-Saylor Wire Cloth Co., St. Louis, Mo.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## SHOVEL LOADERS

Clark Equip. Co., Benton Harbor, Mich.  
Hough, The Frank G. Co., Libertyville, Ill.  
Tractomotive Corp., Deerfield, Ill.

## SLUDGE

H. J. Baker & Bro., New York City

## SOILTEST EQUIPMENT

The Edwards Laboratory, Norwalk, O.

## SPRAYS

Finco, Inc., N. Aurora, Ill.  
Monarch Mfg. Works, Inc., Philadelphia, Pa.  
Spraying Systems Co., Bellwood, Ill.  
Baughman Mfg. Co., Jerseyville, Ill.

## SPREADERS, TRUCK

Baughman Manufacturing Co., Jerseyville, Ill.  
Highway Equipment Co., Cedar Rapids, Ia.

## STORAGE TANKS

Cole, R. D., Manufacturing Co., Newnan, Ga.

## SULFATE OF AMMONIA

American Cyanamid Co., New York City  
American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Jackle, Frank R., New York City  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Phillips Chemical Co., Bartlesville, Okla.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## SULFATE OF POTASH—MAGNESIA

International Min. & Chem. Corp., Chicago, Ill.

## SULFUR

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Texas Gulf Sulphur Co., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## SULFUR—Dusting & Spraying

Ashcraft-Wilkinson Co., Atlanta, Ga.  
U. S. Phosphoric Products Div., Tennessee Corp., Tampa, Fla.

## SULFURIC ACID

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

## SUPERPHOSPHATE

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.  
International Min. & Chem. Corp., Chicago, Ill.  
Jackle, Frank R., New York City  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## SUPERPHOSPHATE—Concentrated

Armour Fertilizer Works, Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Phillips Chemical Co., Bartlesville, Okla.  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## TALC

Ashcraft-Wilkinson Co., Atlanta, Ga.

## TANKAGE

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Jackle, Frank R., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## TANKS—NH<sub>3</sub> and Liquid N

Cole, R. D., Manufacturing Co., Newnan, Ga.

## TOXAPHENE

Ashcraft-Wilkinson Co., Atlanta, Ga.

## TRUCKS—SPREADER

Baughman Mfg. Co., Jerseyville, Ill.  
Highway Equipment Co., Cedar Rapids, Ia.

## UREA & UREA PRODUCTS

Atkins, Kroll & Co., San Francisco, Calif.  
Bradley & Baker, N. Y. C.  
Grand River Chem. Div., Deere & Co., Tulsa, Okla.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Sohio Chemical Co., Lima, O.

## UREA-FORM

Nitro-Form Agricultural Chemicals, Woonsocket, R. I.

## VALVES

Monarch Mfg. Works, Inc., Philadelphia, Pa.

## ZINC SULFATE

Tennessee Corp., Atlanta, Ga.

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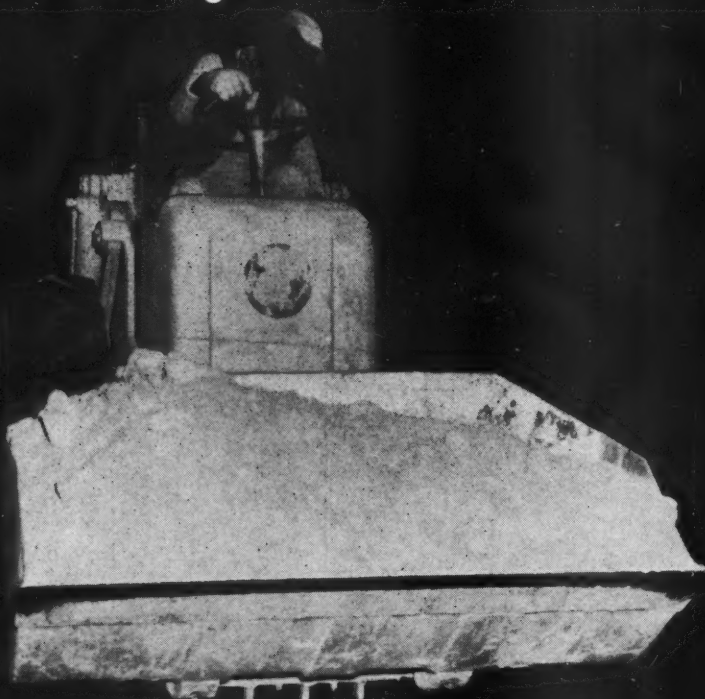
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Removing the solidly-packed fertilizer that accumulates on concrete runways and floors usually is a laborious pick-and-shovel job. But now, the new Model HAH "PAYLOADER", with the scarifier attachment, can do the job in a fraction of the time and at very little cost. For example, at this fertilizer plant the Model HAH cleaned up an area in 30 minutes that formerly required 100 hours of hard, manual labor . . . much to the amazement and gratification of the plant management.

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